Center for Business and Economic Research College of Business Administration The University of Tennessee, Knoxville

-U8710-1
12/22/87

CURRENT RESEARCH IN CBER

Survey OF BUSINESS

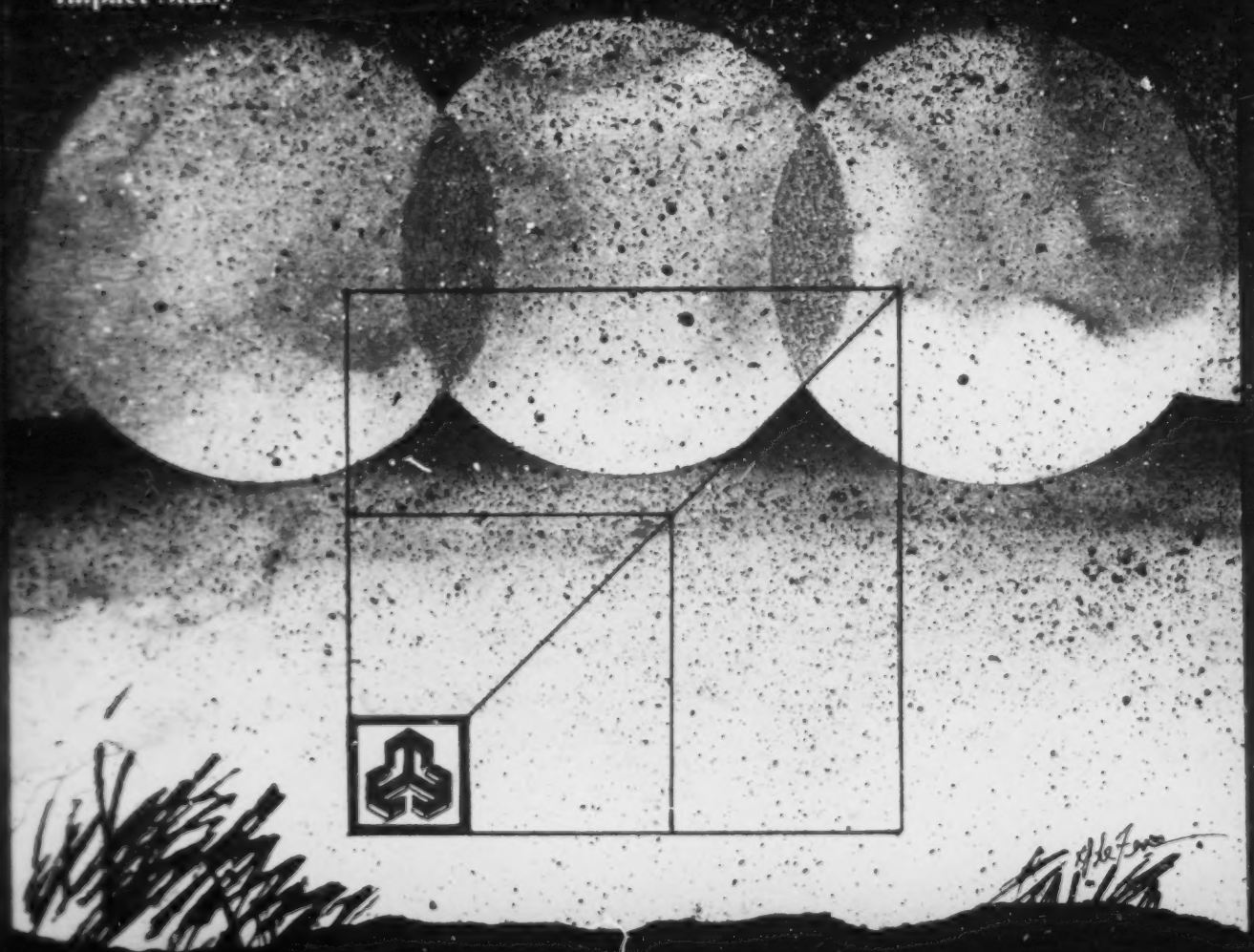
Fall 1987

Entries and Exits of Firms, Phase I

Entries and Exits Phase 2

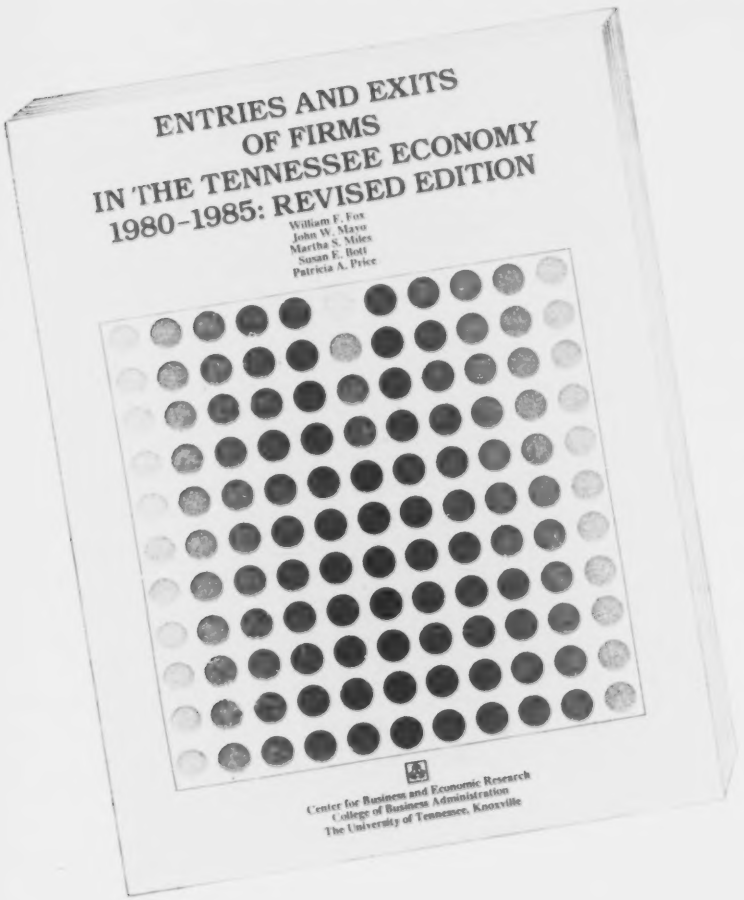
Forecasting Unemployment Insurance Trust Funds

University of Tennessee Impact Study



NOW AVAILABLE

from the socioeconomic monograph series of the Center for Business and Economic Research, College of Business Administration.



Entries and Exits in the Tennessee Economy 1980 - 1985: Revised Edition.

The latest version of the study by CBER and the Tennessee Department of Employment Security of entries and exits of firms which have located in the state, including industries in which the firms are located, the geographic areas where exits and entries have occurred, and the sizes of firms involved.

Information for the study was collected from a data set consisting of 95,000 establishments in Tennessee.

☐ Please send me _____ copy(ies) of **ENTRIES AND EXITS OF FIRMS IN THE TENNESSEE ECONOMY: REVISED EDITION** at the price of $9.50 plus $1.50 postage and handling.

Make checks payable to The University of Tennessee. ☐ Bill Me. ☐ Payment Enclosed.

SEND TO _____
NAME

_____
ADDRESS

_____
CITY STATE ZIP

_____
SIGNATURE OF AUTHORIZED PURCHASER

C O N T E N T S

Consulting Editor's Comments *by William F. Fox*	**2**	*William F. Fox is Associate Director, CBER, UTK, and Director of Research in CBER. He is the author of numerous publications in the areas of public finance and regional economics.*
Entries and Exits of Firms in the Tennessee Economy *by William F. Fox and John W. Mayo*	**3**	*(See William F. Fox above.) John W. Mayo is a Research Assistant Professor, CBER, and Assistant Professor of Economics, UTK. His areas of specialization are in industrial organization and applied microeconomics.*
The Relationship of Manufacturing and Nonmanufacturing Firm Entry and Exit in Tennessee *by John W. Mayo and Joseph E. Flynn*	**11**	*(See John W. Mayo above.) Joseph E. Flynn is a Graduate Research Assistant at CBER.*
Forecasting Unemployment Insurance Trust Funds in Tennessee *by David M. Mandy*	**17**	*David M. Mandy is a Research Assistant Professor, CBER, and Assistant Professor of Economics, UTK. His fields of specialization are economic theory and econometrics.*
Impact of The University of Tennessee on the Knoxville Economy *by Matthew N. Murray*	**23**	*Matthew N. Murray is a Research Assistant Professor, CBER, and Assistant Professor of Economics, UTK. He is interested in policy as it relates to public finance and health and labor economics.*

Survey
OF BUSINESS

C. Warren Neel, Dean
College of Business Administration

CBER APPOINTMENTS

David A. Hake, *Director and Editor,* **Survey of Business**
William F. Fox, *Associate Director and Research Associate Professor*
John W. Mayo, *Research Assistant Professor*
David M. Mandy, *Research Assistant Professor*
Matthew N. Murray, *Research Assistant Professor*
Lynell Aycock, *Clerk-typist*
Susan E. Bott, *Research Associate*
Pamela L. Bridgman, *Research Asst.*
Maxwell J. Cornelius, *Manager, Computer Resources Group*
Deborah W. Crowder, *Office Supervisor, Computer Resources*
Victoria Cunningham, *Research Asst.*
Penelope M. Gilmore, *Research Assoc.*
Marcia Griswold, *Research Assistant*
Donna Kemper, *Secretary*
Jean Knuckles, *Administrative Mgr.*
Carol E. Lammers, *Research Assoc.*
Jennifer F. Langston, *Sr. Secretary*
Carla Newton, *Secretary*
Marie Pease, *Research Asst.*
Merrill E. Pratt, *Research Associate*
Patricia A. Price, *Sr. Research Assoc.*
Betty B. Vickers, *Research Associate*
Melissa Wood, *Research Assistant*

Graduate Research Assistants
Tim Essenburg
Joseph Flynn
Maria Teresa Hocson
Janet Knoedler
John Majors

Consultants
Kenneth E. Quindry, *Professor Emeritus*

Art Director
Richard J. LeFevre, *Associate Professor of Art*

PUBLICATIONS GROUP

Jeanne P. McDonald, *Managing Ed.*
Joan S. Carr, *Research Assistant*
Lynn J. Landry, *Publications Coordinator*
Patricia A. Hunley, *Word Processing Group Supervisor*
Julia C. Elkins, *Word Processing Specialist*
Patricia D. Flynn, *Word Processing Specialist*

CONSULTING EDITOR'S COMMENTS

Currently the Center for Business and Economic Research is involved in a number of studies which have clarified trends or historical occurrences in the state and which raise fundamental questions about possible future legislative and developmental strategies.

One of the largest and most far-reaching projects involves the entries and exits of firms in the Tennessee economy from 1980-1985. In a joint effort with the Tennessee Department of Employment Security, CBER studied the industries in which firms are located, the geographic areas where the firms entered or exited, and sizes of the firms involved. Results of the research are reported in the first article on page 3, by William F. Fox and John W. Mayo.

A follow-up study and subsequent article by John Mayo and Joseph E. Flynn addresses the relationship of manufacturing and nonmanufacturing firm entry and exit in Tennessee and considers whether growth in basic economic activity over time causes nonbasic activity within a region (see page 11).

Through his research involving forecasting unemployment insurance trust funds in Tennessee, David M. Mandy (page 17) has written an article that offers suggestions to counteract the more limited assumptions offered by existing models.

In the final article on page 23, Matthew N. Murray discusses the impact of The University of Tennessee on the Knoxville area economy and illustrates, through charts and tables, the tremendous fiscal and cultural effects generated on the region by the presence of the University.

Although these articles constitute only a representative sample of CBER's current research projects, they are indicative of our interest in promoting further economic and socioeconomic study in areas that affect the past, present, and future of the state of Tennessee.

William F. Fox
Associate Director, CBER
and Associate Professor of Economics

SURVEY OF BUSINESS, The University of Tennessee, Knoxville (ISSN 0099-0973), is published quarterly by the College of Business Administration, Center for Business and Economic Research, The University of Tennessee, Knoxville to inform the Tennessee business professional about current economic and socio-economic trends and techniques developing in the state. Authorization No. EOI-1490-002-87. Back issues and article reprints may be ordered at $1.25 per copy. Address correspondence to Editor, Center for Business and Economic Research, Suite 100, Glocker Hall, The University of Tennessee, Knoxville, Knoxville, Tennessee, 37996-4170. Second class postage paid at Knoxville and Nashville, Tennessee. Requests for inclusion on mailing list and address corrections should be sent to the same address. The publisher of the **Survey** *assumes no responsibility for statements made by writers. Articles reflect the opinions of the authors. Postmaster: Send Change of Address form 3579 to: Center for Business and Economic Research, The University of Tennessee, Knoxville, Knoxville, Tennessee, 37996-4170.*

ENTRIES AND EXITS OF FIRMS IN THE TENNESSEE ECONOMY

by William F. Fox and John W. Mayo

Considerable diversity in the growth rate of active firms has occurred across the state in the 1980-1985 time period, with highest growth rates concentrated in the Nashville, Knoxville, and Jackson areas.

For the first time, data are now available on firm entries and exits in Tennessee as a result of the first of two separate analyses undertaken by the Center for Business and Economic Research and the Tennessee Department of Employment Security. (A condensation of the second study begins on page 11.) Not only do these data allow direct examination of a basic source of economic development, but together with subsequent research, they should shed light on the relationships between economic development policies typically directed at firms and more macroeconomic indices of economic growth such as employment growth, growth of Gross State Product, and the unemployment rate. Basically, the first analysis, *Entries and Exits of Firms in the Tennessee Economy, 1980-1985*, describes the number of entries and exits of firms in the Tennessee economy, the industries in which the firms are located, the geographic areas where these have occurred, and the sizes of the firms involved.

An entry is defined as a firm which becomes economically active in the specific time period under consideration. Two types of entries occur: an original entry, which represents a firm operating for the first time in this state; and a re-entry, which represents a firm that returns to the economy more than one year after having exited.

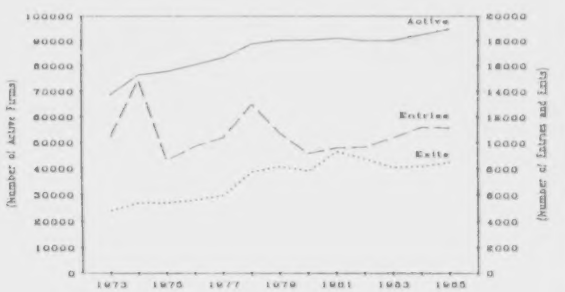
An exit is defined as a firm which became economically inactive during the specific time period and remained so for at

least one year. One exception is that firms that became economically inactive in 1985 and had not re-entered by the second quarter of 1986 are regarded as exits. Some firms exit and re-enter more than once each. Note that firms which leave and re-enter during a period of one year or less are regarded as being continuously active. A count for entries and exits is obtained in the same manner as the count for active firms.

Active Firms, Entries and Exits

The number of entries, exits, and active firms for 1973 to 1985 is illustrated in Figure 1. The number of firms grew

FIGURE 1
NUMBER OF ACTIVE FIRMS, BUSINESS ENTRIES AND BUSINESS EXITS, 1973 - 1985



from 68,725 in 1973 to 94,870 in 1985, representing an increase of 26,145 firms. The compound annual growth rate of firms is 2.7 percent. A relatively consistent upward trend in the number of firms can be seen, as a decline occurred only in 1982.

It is interesting that entries show a closer relationship to the business cycle than do exits. For example, entries exhibit noticeable declines in the recession years of 1975 and 1980; and although no decline occurred in the recession year of 1982, the number of entries was relatively low. Similarly, a tendency for a higher number of entries in the other (expansion) years is apparent. Entries also appear to be less volatile across business cycles in the 1980s than was the experience of the 1970s. This is a trend consistent with the evidence of employment and output data that indicate that Tennessee has not cycled as much relative to the nation in the 1980s.

There appears to be a small trend toward a growing number of firm exits over time as illustrated in the figure, though this is consistent with more active firms. There is no direct evidence to indicate that the number of exits rises in a recession. In fact, exits actually declined relative to the previous year during each recession. However, there is a tendency for exits to increase in the year *after* a recession, meaning exits may lag economic cycles rather than coinciding with them. Also, firms may be able to withstand the financial pressures created by recessions for a while before finally succumbing, and this delayed reaction may lead exits to increase as the economy begins to improve.

Active Firms by Industry

Trends in the distribution of active firms by industry show that Service firms, comprised of Miscellaneous Services, Health Services, Business Services, and Retail Trade represent a combined 57.2 percent of the active firms in 1985. Retail Trade's share has dropped dramatically since 1972, but Services has grown. Wholesale Trade has grown as a share of active firms as the Retail Trade share has fallen. The percentage of firms in Manufacturing is small, but has grown since 1972. Considering the decline in Manufacturing as a share of employment since the mid-1960s, the study indicates that the average size of Manufacturing firms has fallen. However, the relative share of output derived from Manufacturing has remained constant; so the average firm appears to be using more capital and fewer employees while maintaining its level of production. The other shift that should be noted is the decline in the percentage of firms in the Construction industry.

Metropolitan and Nonmetropolitan Areas

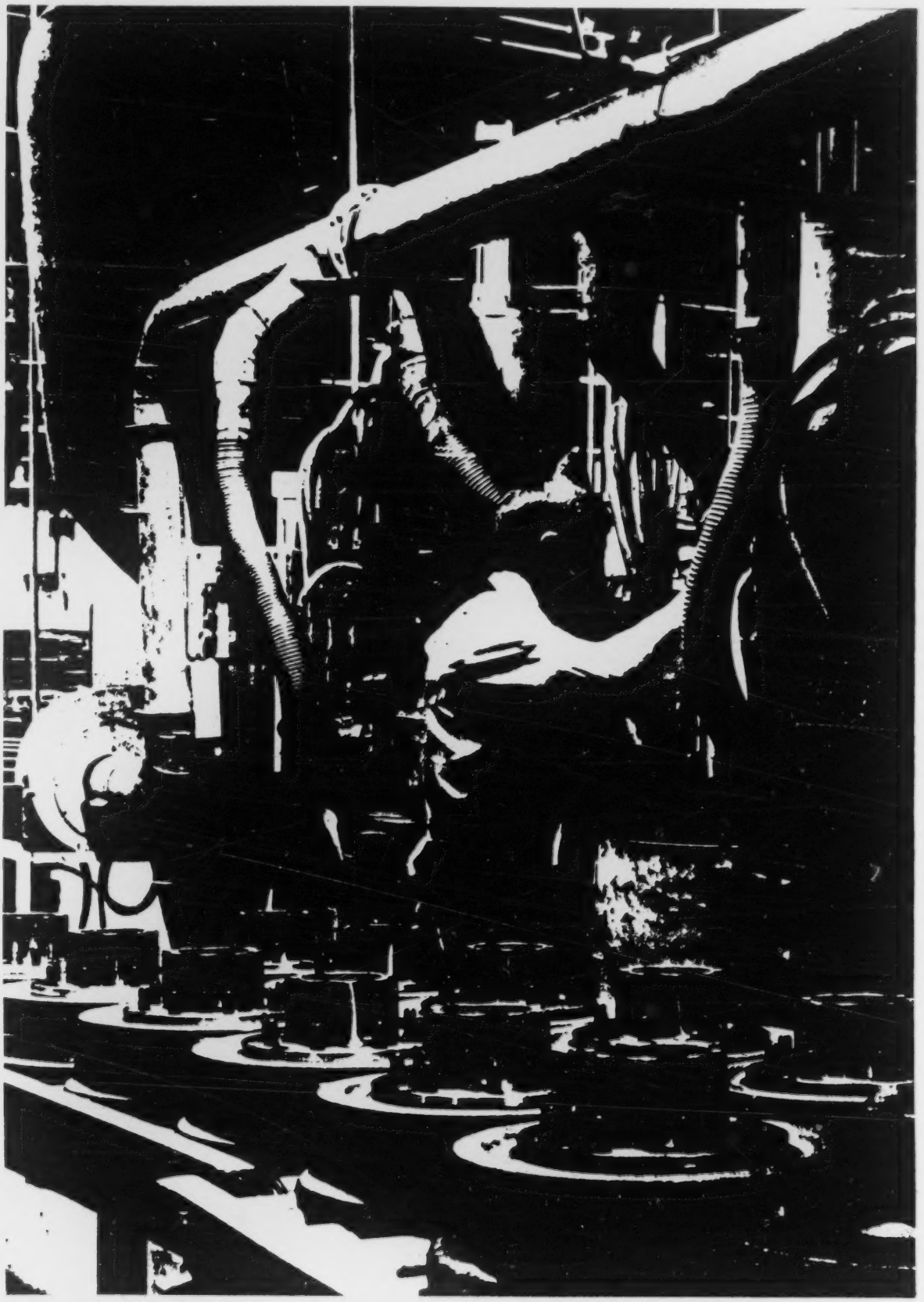
Several distinctive differences can be seen in a comparison of the distribution of active firms in 1985. First, metropolitan areas have more Services in all three categories: Miscellaneous Services, Health Services, and Business Services. Metropolitan areas also have more firms in the FIRE (Finance, Insurance and Real Estate) industry, whereas nonmetropolitan areas have dramatically more Retail Trade establishments as a percentage of the total. Nonmetropolitan areas also have more Retail Trade establishments per capita than do metro areas. That nonmetropolitan counties generally have lower per capita taxable sales than the largest metropolitan counties may be evidence that nonmetropolitan places need many, relatively small retail establishments to serve a more dispersed population. Nonmetropolitan areas also have considerably more manufacturing establishments.

- Considerable diversity in the growth rate of active firms has occurred across the state in the 1980-1985 time period, with highest growth rates concentrated in the Nashville, Knoxville, and Jackson areas. Most of the counties where the number of firms declined are rural, although several rural counties also experienced rapid growth in the number of active firms. The rapid employment growth counties generally had high rates of entry for new firms, and some of them also had high exit rates for firms.

Some of the other highlights of the study are listed below:

- Over the past dozen years the pattern of entries and exits suggests that entries are somewhat more sensitive to the national business cycle than are exits.

- From 1972 to 1985 the proportion of firms in Retail Trade has dropped sharply, from about 31 percent to under 24 percent. At the same time, however, the proportion of firms engaged in Wholesale Trade and Services has risen,



so that the proportion of all firms in the Trade and Services sectors has remained relatively constant.

- Considerable diversity in the growth rate of active firms has occurred across the state in the 1980-1985 period. The highest growth rates tend to be concentrated in the Nashville, Knoxville, and Jackson areas.

- The number of new businesses grew in each year from 1980-1985, except for the last year, despite the occurrence of two recessions during this period. The compound annual growth rate of new business was 3.8 percent from 1980-1985. A total of over 60,000 new firms began operations in Tennessee from 1980-1985.

- The average employment impact of entrants varies significantly by industry. For instance, first-year average employment of entrants ranged from nearly 20 in Manufacturing to less than four in FIRE, Miscellaneous Services, and Wholesale Trade. Similar diversity exists in wage patterns of new entrants.

- Over 50,000 firms ceased operations in Tennessee during the 1980-1985 period. During the 1982-1985 period the number of exiting firms fluctuated within the 8,000 to 9,000 range per year.

- Exit rates, measured by the number of exits relative to the number of active firms, vary substantially geographically and across industries. Industries with the highest exit rates are Mining; Construction; Business Services; Transportation, Communications, and Public Utilities (TCPU); Retail Trade; and Miscellaneous Services. The mideast and midwest portions of the state experienced the highest exit rates over the 1980-1985 period.

TENNESSEE BUSINESS ENTRIES, 1980-1985

Annual numbers of business entries for the period 1980-1985 are shown in Table 1. There is a general increase in the number of entries over the six years--a compound annual growth rate of 3.8 percent. After 1980, every year but 1985 has shown an increase over the previous year, especially in years immediately after a recession. Following 1980, a recession year, 1981 showed a 5.1 percent increase in business entries; and the recession year 1982 had a small but positive growth of about 0.3 percent. The two recovery years, 1983 and 1984, showed 7.4 and 7.8 percent increases, respectively. In 1985 there was a drop in total entries of about 1.1 percent from 1984, which could be explained by a pronounced slowdown in economic growth that occurred in 1985 compared to the economic boom of 1984. However, it is also possible that some 1985 entries were not yet discovered and recorded when the data were prepared for this report in late 1986.

The number of entries was larger than the number of exits in each of the six years. The smallest difference showed about 300 more entries than exits in 1981 and the largest about 2,900 more entries in 1984.

The average firm which entered in 1980 stayed in business for 14.2 quarters, or about 3.5 years. The longest average life was in Agriculture (18.0 quarters); the shortest was in Mining (11.0 quarters). A total of 1,231 firms, or 13.5 percent of the 9,130 firms entering in 1980, failed to survive more than three quarters.

Entry Rate for Firms

The importance of a given number of firm entries in any year, industry, or place can be judged by comparing the number with the total number of firms existing alongside it in the same year, industry, or place.

From 1980 to 1985 the average entry rate for firms was 11.1 percent. (See Table 2.) Falling below that average were the years 1980-1982, which spanned two back-to-back recessions. The highest entry rate was 12.0 percent in 1984, the year when the economy as measured by employment and output was the strongest. Geographically, variations in entry rates are noticeable throughout the state. For example, clusters of high entry rate counties are seen in the metropolitan areas of East and Middle Tennessee, whereas low entry rates predominate in the rural areas of the upper west and eastern middle parts of the state. There are higher average entry rates in metropolitan areas (11.5 percent) than in nonmetropolitan areas (10.4 percent) and slightly higher entry rates in nonborder counties (11.5 percent) than in border counties (10.9 percent). The lower entry rates in border counties may suggest that certain state policies inhibit the location of economic activities in Tennessee. Comparison of East, Middle, and West Grand Divisions shows that Middle Tennessee had both the highest entry rate (11.6 percent) and the lowest exit rate (9.1 percent), giving

TABLE 1
TENNESSEE ACTIVE FIRMS AND ENTRIES
1980-1985

Year	Active Firms	Entries
1980	90,472	9,130
1981	91,193	9,593
1982	90,016	9,625
1983	90,355	10,337
1984	92,644	11,148
1985	94,870	11,020
Total	--	60,853

TABLE 2
ENTRY RATE FOR FIRMS, 1980-1985
(Percent)

Year	Entry Rate
1980	10.1
1981	10.4
1982	10.7
1983	11.4
1984	12.0
1985	11.6
Average	11.1

Three average employment statistics were examined. Employment data for (1) the first quarter of existence, (2) the first four quarters of existence, and (3) the quarter where employment had been the highest were gathered for each firm entering the state's economy between 1980 and 1985.

it the highest net entry rate (2.5 percent).

By major industry, the highest entry rate was in Business Services, with high entry-high exit industries in Business Services; Mining; Transportation, Communications, and Public Utilities (TCPU); Miscellaneous Services; Construction; and Retail Trade.

Size of Entering Firms

Measuring the size of a business firm usually involves the examination of some combination of the number of employees and the dollars involved, perhaps in gross sales, profit, or payroll. Data used for this study include, for individual firms, the total number of employees by quarter and the gross wages paid to those employees.

Three average employment statistics were examined. Employment data for (1) the first quarter of existence, (2) the first four quarters of existence, and (3) the quarter where employment had been the highest were gathered for each firm entering the state's economy between 1980 and 1985. Numbers were then averaged for all those firms. In cases where the firm had not yet existed for four quarters, the first year's employment was averaged only for the quarters where employment did exist. Typical entering firms started out small, employing an average of 3.5 people in the first quarter and growing to an average of 5.0 people in the first year.

Between 1980 and 1985, nearly 83 percent of entering firms employed five people or fewer during the first year. In fact, about 4 percent employed no workers at all during that year, and only about 1.1 percent employed more than 50. As the firms begin reaching their size potential, the percentages shift upward toward larger employment sizes, with about 68 percent remaining in the 0-5 size class, and about 2.6 percent employing more than 50. In comparison, among all Tennessee active firms, there is a stable 6 to 7 percent in the over-50 size group from 1980 to 1985, and a consistent average employment of about 20. Peak employment levels of the oldest of these entrants fall far short of the average size of 20. The average peak employment reached so far is 11.1 for 1980 entries; 9.8 for 1981, and 10.6 for 1982 entries. It must be pointed out that the business entries include firms that never became established and thus would cause some downward pressure on the average size of all firms and even more downward pressure on the average size of entering firms. Nevertheless, the small size of recent entrants may be evidence of an emerging general decline in the size of Tennessee firms.

The most meaningful way to look at average employment among new entries is to consider the new jobs they create. There were over 276,500 new employment opportunities between 1980 and 1985 attributable to the 60,853 firms entering the economy, an average of about 4.5 jobs per firm. (This is based on a firm's employment level within the calendar year of entry and not on its first four quarters of operation.) The year of entry average is similar to the first four quarters' average, except the latter would be larger because many new firms tend to grow rapidly.

Wages of Entering Firm

Firms entering the state's economy between 1980 and 1985 brought a total of nearly $3.6 billion in wages (an average of about $58,850 per entry) during their first year of operations.

Entering firms paid an average first-year wage of $12,441 during 1980-1985. While there was a general upward trend in the average nominal wage paid by entering firms over the years, there was a considerable drop of over 5 percent, from $12,764 to $12,111, in the post-recession year 1983. The average has risen slowly since then, and was approaching $13,000 in 1985. Adjusted for inflation, however, first-year average wages showed a steady decline over the period. As one would expect, entering firms tended to pay lower wages during the first year than existing firms were paying at the time. The average nominal annual wage for all active firms during 1980-1985 was about $14,700, 18.2 percent higher than the comparable figure for entries.

TABLE 3
TENNESSEE ACTIVE FIRMS AND EXITS
1980-1985

Year	Active Firms	Exits
1980	90,472	7,801
1981	91,193	9,303
1982	90,016	8,748
1983	90,355	8,108
1984	92,644	8,218
1985	94,870	8,536

For firms entering in 1985, Retail Trade, which employs many part-time people, was the lowest, at $7,260. Wholesale Trade was the highest at $22,606. Others paying relatively high wages in the first year were Mining, Health Services, and FIRE.

TENNESSEE BUSINESS EXITS, 1980-1985

Table 3, a list of exits by year for Tennessee, shows that the number of exits was generally stable over the six years studied. The highest number occurred in 1981, between the 1980 and 1982 recessions; and the lowest number occurred in 1980, a recession year.

Three types of exits are included in the total. First, 3.4 percent are firms which exited, stayed out of business for at least one year, and have become active firms again. Second, 87.1 percent are firms which exited only once. The remaining 9.5 percent have entered and exited the economy more than once. Those in the latter group are currently out of the economy. These statistics indicate that an exit fails to evidence that a firm will not operate again, and therefore

should not be regarded as a death of the business.

The greatest percentage of exits between 1980 and 1985 is shown to have occurred in the Retail Trade industry, which also had the highest percentage of entries. The total Trade sector, comprised of Retail and Wholesale, accounted for 36.1 percent of the exits. Actually, the Service sector had more exits (28.6 percent) than the Retail sector once Miscellaneous Services, Health Services, and Business Services are aggregated. Service industries generally had much higher entry rates compared to exit rates than did the Retail Trade industries. Manufacturing firms accounted for only 5.6 percent of the total exits which occurred in this time

TABLE 4
EXIT RATE FOR FIRMS, 1980-1985
(Percent)

Year	Exit Rate
1980	8.6
1981	10.2
1982	9.7
1983	9.0
1984	8.9
1985	9.0

period still, this means that 2,844 manufacturing firms exited during the six years.

The average firm which exited remained in business 17.1 quarters, or more than four years. A total of 8,092 firms, or 16 percent of the exiting firms, failed to survive for more than three quarters.

Exit Rate for Firms

The exit rate, measured by the number of exits relative to the number of active firms, is probably the most useful way to examine the propensity for exits to occur by industry and over time. The annual exit rate for firms averaged 9.2 percent over the six years (see Table 4). The highest exit rate occurred in 1981 and the lowest in 1980. The variation in exit rates for firms is similar to the pattern of total exits given in Table 3. The stability of the exit rates suggests that the general upward trend in the number of exits is simply consistent with the increasing number of active firms.

The exit rate was lower for metropolitan areas (9.2 percent) than for nonmetropolitan areas (9.4 percent), which is inverse from the higher entry rates which occurred in metropolitan counties. That border counties (9.2 percent) have slightly lower exit rates than nonborder counties (9.3), however, is consistent with the higher entry rates into nonborder counties.

By industries, Mining and Construction firms have the highest exit rates, as more than one out of every six Mining firms and nearly one out of every seven Construction firms exit the economy every year. (Mining and Construction are the only industries where the exit rate exceeds the entry rate.) At the low end, fewer than 1 out of every 25 Health Service firms exits the industry each year. There is some tendency for industries with high entry rates to also have high exit rates, though the pattern is not perfect. As noted above, the six industries with the highest exit rates also were in the highest seven industries as measured by entry rates.

Small differences exist between the exit rates of individual industries in metropolitan and nonmetropolitan areas, except that the exit rate for Manufacturing is higher in nonmetropolitan areas, although the entry rate is also slightly higher. Nonmetropolitan areas have lower exit rates for the Wholesale Trade, Retail Trade, FIRE and several other industries. Nonmetropolitan counties have lower exit rates in Agriculture, consistent with the lower entry rate, and higher exit rates for Business Services, consistent with the higher entry rate.

Employment Size of Exiting Firms

Employment during the exit year for firms which left the Tennessee economy totalled 142,018 between 1980 and 1985. This means that the economy had to provide 23,670 jobs each year to replace those lost as firms exited. First-quarter employment for exiting firms was higher than for entering firms, but the reverse was true for first-year employment. Average employment values can exaggerate size because employment in large firms raises the average. Most of the exiting firms began relatively small, and a small percentage reported no employment during the first year. Mining had the highest percentage, with no employment in the first year (5.7), followed closely by construction (5.2). The high exit rate for small firms may arise partly because many firms are started but never sustain any economic activity.

Nearly two-thirds of the firms employed five or fewer people at their peak, more than 9 out of every 10 firms employed 20 or fewer during their peak, and only 0.4 percent of the firms (191) employed more than 200 during their peak quarter. There are dramatically more firms employing above 200 workers at their peak than during their first year.

The total of 142,018 jobs lost because of business exits represents an average of 2.8 people per exiting firm. This loss, by comparison with peak employment, would be nearly four times larger, as evidenced by the average peak quarterly employment of 10.1, emphasizing the difficulty of observing employment losses by comparison with the last year of operation. Peak quarterly employment could have occurred before 1980, so much of the loss from attrition of firms may have occurred in years before 1980. There appears to be a business cycle in the average peak size of firms which exit. As the recession worsened between 1980 and 1982, firms with larger peak employment exited the economy. Then average peak size declined as economic expansion began in 1983 and continued beyond the data's end.

There is wide variation across industries in the average size during the exit year. Manufacturing firms were much larger than the average size during their exit years and were responsible for 17.0 percent of employment losses. Still, the average size of exiting manufacturing firms is much lower than the average size of entering manufacturing firms. Although retail Trade firms were only slightly above average size in their exit years, they accounted for 31.4 percent of the total losses.

Wages of Exiting Firms

Wages are a second measure of the loss to the economy from exiting firms. Other sources of income lost as firms exit

Employment during the exit year for firms which left the Tennessee economy totalled 142,018 between 1980 and 1985. This means that the economy had to provide 23,670 jobs each year to replace those lost as firms exited.

are payments for other factors of production such as labor, the purchase of goods locally, and tax payments.

Total wages paid by exiting firms in their last year in the period studied was $1.63 billion, which amounts to an average wage bill of $32,136 per exiting employer. However, since only 20.14 percent of the firms paid more than $30,000, this average is raised by a small number of very large firms. The average wage rate of people employed by the firms in their last year was $9,985. Average wages are much lower for exiting firms than for entering firms and are much lower than for all active firms.

The median firm which exited paid between $5,000 and $7,500 average wages during the first year of operations. At the other extreme, 11.2 percent paid more than $15,000 per worker. Wholesale Trade, Mining, TCPU, Business Service, and Health Service industries had the highest percentage of firms which paid more than $15,000 average wages and then exited at a later date. Of those firms which paid wages, Retail Trade, Agriculture, and Miscellaneous Service industries had the highest percentage of low wage firms (measured as below $5,000 per worker).

There does not appear to be evidence that lower-wage firms reduced their wages in the last year. A lower percentage of the Retail Trade, Miscellaneous Service, and Agriculture firms paid average wages of $5,000 or less in their exit year than in the first year of operations. The lower average wages in the first year may represent greater use of part-time employees. One anomaly in the wage data is that only 1.1 percent of the firms reported no income in the first year of operations, as opposed to the 4.2 percent that reported no employment, meaning that some firms report wages but no employment. Construction firms are the most likely to exit after having no wages paid during the first year of operations. Another 45.5 percent of the firms paid total wages of $10,000 or less during the first year of operations. Only 24 percent of the firms which exited Tennessee during 1980-85 paid more than $30,000 in total wages during their first year of operations.

ECONOMIC AND POLICY PERSPECTIVE

Typical goals for state policymakers are usually couched in terms of macroeconomic indicators, e.g., unemployment, employment growth and personal income. At the same time, however, the policy tools with which we have sought economic development have been directed at firms, which are microeconomic entities. The relationship between these macroeconomic goals and microeconomic tools is not well understood.

Compounding these problems for Tennessee policymakers is the rapid restructuring of international, national, and state markets. One of the most radical of the changes is that Tennessee goods, services and resources compete increasingly in international markets. Among southeastern states, Tennessee ranks second only to North Carolina in its share of manufacturing employment, which is related to exports. And second, fundamental shifts in economic activity away from manufacturing employment are occurring both nationally and within Tennessee. This shift poses special problems for a state that has historically been manufacturing-intensive.

Several interesting facts and figures are readily apparent from even the most casual inspection of the data gathered in this study:

- Gross entry over the six-year period does not appear to be highly sensitive to business cycle conditions. In each year from 1980 to 1985, with the exception of 1985, the number of gross entries grew. This growth occurred despite the fact that 1982 was the deepest year of recession since the Great Depression. From 1980 through 1985, the gross number of new firms in Tennessee grew at a compound annual growth rate of 3.8 percent.

- The largest number of new firms in Tennessee for the past six years has been in Retail Trade and Miscellaneous Services.

- The vast majority of new firms begin small. During the 1980-85 period the average first-quarter employment of entrants was 3.5. Average first-year employment was 5.0, while average peak employment of entrants during 1980-85 was 9.5.

- Tennessee's traditional source of employment strength, Manufacturing, generated only 5.6 percent of all new entrants in any given year. The average size of new Manufacturing firms in Tennessee, however, is much larger than the typical new entrant. Nearly 60 percent of all new entrants with more than 200 employees in the first year of operations were Manufacturing firms.

- Between 1980 and 1985 over 50,000 firms exited from the Tennessee economy. The greatest percentage of these exits occurred in the Retail Trade and Service industries, which coincidentally had the highest rate of entries over this period.

- The annual entry rate for firms over the 1980-85 period was 11.1 percent, while the average exit rate was 9.2 percent. However, these rates vary sharply by industry.

- Employment losses attributable to firm exits are difficult to determine. Nevertheless, exiting firms had an average peak employment of 10.1 workers and an average of 3.4 employees in their last year of existence.

FUNDAMENTAL QUESTIONS RAISED

While these largely descriptive data provide some interesting facts and figures, their real importance lies in the numerous and fundamental questions that are raised, but not answered, by the mere creation and display of these data. For instance:

- What are the economic and policy determinants of firm

creation (entry)?

- Do these determinants vary from industry to industry? By geographic region? By condition of the business cycle?
- What is the relative importance of the various policy determinants of firm entry?
- Given some level of firm creation, do state economic policies affect the probability of firm survival? If so, which state policies, and by how much?
- What are the determinants of new firm longevity? Do these determinants include state policy variables? If so, to what extent might the lives of new firms be prolonged as a result of judicious state economic policy? How might these "duration" policies ultimately feed back to affect the firm creation process?
- Which, if any, state economic policies have contributed to the exit of new or older firms? Should these policies be retained for fear of excessive intervention in market forces or can they conveniently be altered to increase the "survivability" of Tennessee firms?
- What does the growth path for new firms look like? Is this growth path in any way affected by state policies?

From the multitude of questions that emanate from the creation of the data set, some organization for systematic and orderly analysis and policy implementation is needed. The main areas for inquiry and future policy development can be classified as follows: 1)entry of firms; 2)exit of firms; 3)growth path of firms; and 4)duration of firms. An understanding of each of these four major areas of inquiry is likely to significantly enhance our knowledge of the economic development process, both generically and with specific applications to the state of Tennessee. In light of this research agenda, it is useful to consider some of the specific issues in each of the four areas.

SUMMARY AND CONCLUSION

Economists tend to favor competitive markets for their efficiency properties, while others favor them for their ability to decentralize economic power. Regardless of the source of this affection for competition, however, the entry process can be seen as an absolutely essential linchpin to the realization of the desirable attributes of competitive markets. Yet despite the critical role that entry plays in the operation of competition, the study of the entry process to date has been very limited because of the historic lack of suitable data. The few studies that do exist have almost universally used data collected by the U.S. Census Bureau, which are collected and published only at five-year intervals. Moreover, only data on the net number of new firms is available from that source, and then only for the entire United States. Other sources of entry and exit data which have recently emerged include Dun and Bradstreet and the Small Business Administration's Small Business Data Base, but so far, very little is known about the economic or policy determinants of entry, particularly at the state level.

In this regard, subsequent research should represent a major step forward in our general and specific knowledge of the determinants of firm entry, with particular attention given to the variety of state-specific policies that may affect firm entry. For instance, tax and expenditure policies are sometimes thought to influence firm location decisions. To the extent that this is true, it is likely to be revealed through effects on firm entry into Tennessee. Also, it is generally believed (though rarely quantified) that state-level regulatory policies may affect firm entry and hence overall economic development prospects. It is also possible to examine Tennessee's major regulatory policies in contrast to other states, and, where possible, quantify the effects of regulatory differences in firm entry rates.

It is commonly assumed by both regional economists and development specialists that the ultimate impact on the economic vitality of a region is larger when a manufacturing firm enters than when a nonmanufacturing firm enters. The reason for this assumption is the belief that manufacturing firm entry will subsequently attract other nonmanufacturing firm entry, while the converse is not true. Data collected and described here permit a much more detailed study of this regional "base theory" than has ever been possible (see the following article).

Moreover, while economic analysis and development efforts have traditionally focused on the creation of new firms or the attraction of existing firms to a location, very little attention has been paid to the phenomena of firm exit. Yet it is painfully clear that the economic vitality of an economy can be critically affected when firms exit markets either through bankruptcy or relocation. During the 1980-1985 period, over 50,000 firms exited the Tennessee economy. On average, 9.2 percent of Tennessee firms exited in any given year. And, as was pointed out earlier in this article, this exit phenomenon, on a percentage basis, is worse for nonmetropolitan than metropolitan areas, given the apparent dependency of nonmetropolitan areas on relatively few employers.

At the heart of the exit decision is the lack of current and prospective profitability from continued operations in Tennessee, which may be caused by a variety of factors: managerial inefficiencies, low demand relative to costs, adverse changes in essential input prices, unfavorable tax liability, changes in regulatory policies, etc. The public policy consequences of firm exit differ depending on the source of firm exit.

Clearly, expanding employment by the establishment of new firms increases the opportunities for a fully employed Tennessee labor force, rising incomes, and improved standards of living. Conversely, increased unemployment associated with firm contractions contributes to the retardation of economic growth, a drain in state unemployment insurance resources, and personal hardship for unemployed individuals. The creation of the ES/CBER data set should permit a more systematic investigation than has been heretofore possible on the array of economic and policy issues concerning the entry and exit of firms.□

(Condensed from a report by William F. Fox, John W. Mayo, Martha S. Miles, Susan E. Bott, and Patricia A. Price.)

THE RELATIONSHIP OF MANUFACTURING AND NONMANUFACTURING FIRM ENTRY AND EXIT IN TENNESSEE

by John W. Mayo
and Joseph E. Flynn

Does growth in basic economic activity over time cause nonbasic economic activity within a region? This study examines relationships of manufacturing and nonmanufacturing firm entry.

Based upon data gathered during 1986 on the entry and exit of Tennessee firms (see article on page 3), this second in a series of studies by CBER was conducted to explore the nature and direction of causality of firm entry and exit patterns in Tennessee. Several important questions were addressed. For instance, does manufacturing firm entry lead to the entrance of nonmanufacturing firms into the Tennessee economy? If so, to what extent? Is it possible that nonmanufacturing entry or exit affects the observed pattern of manufacturing entry into the state? To what extent is the time series pattern of entry and exit relationships similar and dissimilar across the various geographic regions of the state?

Answers to these questions have traditionally been answered by relying upon an analysis known as economic base theory. This theory emphasizes the relationships between various sectors (industries) within a regional economy. In particular, economic base analysis typically has distinguished between basic or primary industries and nonbasic or nonprimary industries. Given this bifurcation, the analysis contends that growth in basic economic activity over time causes (or drives) nonbasic economic activity within a region. At its most fundamental level, economic base theory holds that basic sector economic activity is determined exogenously, while nonbasic activity is determined or caused by basic activities. This dominant view of regional economic development has for many years prompted policymakers, particularly at the regional level, to

The implications of traditional economic base theory are not uniformly supported. For instance, contrary to the foundations of economic base theory, the study found both an instantaneous and lagged causal effect from nonmanufacturing firm entry and exit to manufacturing firm entry and exit.

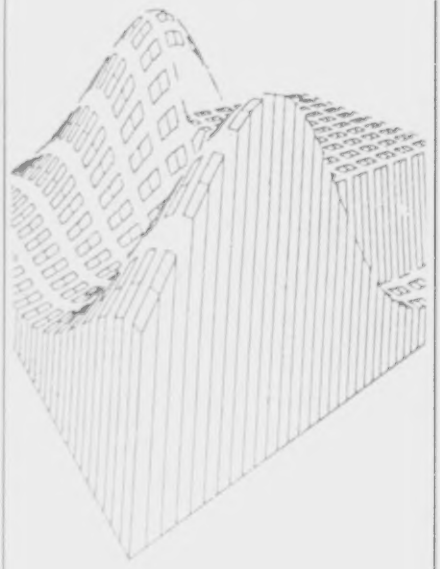
focus economic incentives on the recruitment of manufacturing firms. In recent years, however, increasing attention has been given to the growing importance of the service sector in total economic activity. Indeed, in some areas policymakers have fundamentally altered regional development policies to attempt to attract nonbasic (service) industries. This recent reversal in policy approaches, together with the long-run growing importance of the Services sector, raises several fundamental questions regarding the underlying nature and direction of causality in regional economic activities.

The data on firm entry, firm exit, employment, and wages of all firms covered by the Tennessee Unemployment Insurance Law were gathered for the period from 1973 through the last quarter of 1986. Data prior to 1973 were incompatible with more recent data due to major changes in both the unemployment insurance law and data collection procedures.

By 1987, over 95,000 firms operating in Tennessee were included in the data base. For purposes of the study, quarterly data on firm entry and firm exit, by industry, were utilized. An entry is generally defined by a firm's establishment or re-establishment of an account with the Tennessee Department of Employment Security under the state's Unemployment Insurance program. Similarly, firm exits are defined by the termination of an account due to economic inactivity.

Examining Causality

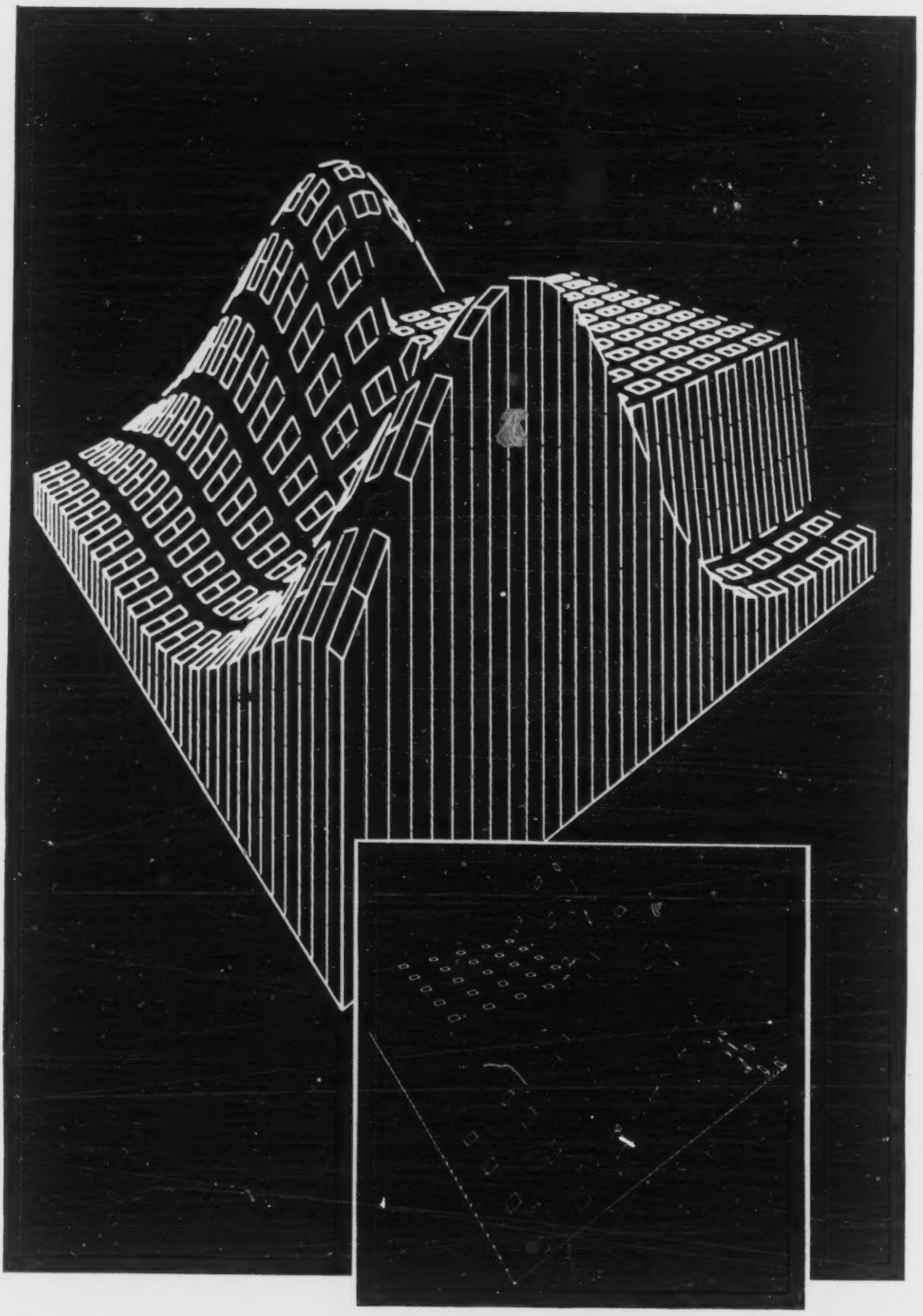
Given these data on firm entries and exits, by 4-digit SIC industry and county, some level of aggregation, both across industries and geographic regions, was necessary to provide a meaningful and consistent examination of causality. For purposes of industry aggregation, we examined several plausible alternatives. As a base case, we examined causality issues at a statewide level on the basis of manufacturing and nonmanufacturing



industry specification. We then partitioned the data to examine causality issues on a more detailed industry and geographic basis. For the purpose of industrial disaggregation we considered the relation of manufacturing firm entry and exit to three major nonmanufacturing industries: (1) Services; (2) Finance, Insurance, and Real Estate (FIRE); and (3) Trade (including both the Wholesale and Retail Trade).

Similarly, we disaggregated the data geographically, since intuitively the possibility exists that entry and exit patterns may be quite different across various geographical regions in the state. The geographic patterns took two principal forms: (1) East, Middle, and West Grand Divisions; and (2) Urban versus Rural. Several fundamental results emerged from the analysis. First, the basic assumption of economic base theory, that basic firm activity (entry and exit) causes nonbasic firm activity, is strongly confirmed. Manufacturing entry is shown to cause approximately six nonmanufacturing entrants in the short run and four nonmanufacturing entrants once cumulative effects are considered. The average size of a new manufacturing firm in its first year of employment was 18.7 employees, while for nonmanufacturing firms it was 3.7 employees. This suggests that the entrance of a new manufacturing firm leads, on average, to approximately 22 new nonmanufacturing jobs in the short run and almost 15 nonmanufacturing jobs once cumulative effects are considered. Extreme care should be exercised, however, in the interpretation of these numbers for purposes of calculating traditional employment multipliers since, *inter alia*, these numbers do not account for the expansion of incumbent firms.

Similarly, the exit of a manufacturing firm has both an instantaneous and lagged causal effect on nonmanufacturing firm exit, and moreover, the effects of a manufacturing firm exit on subsequent nonmanufacturing exit are seen to be quantitatively large.



It seems that nonmanufacturing firms are more locationally dependent on manufacturing firms than manufacturing firms are on nonmanufacturing firms. This is almost certainly because manufacturing firms tend to have wider geographic markets for their products than do nonmanufacturing firms. As a result of these wider geographic markets for manufacturing firms, entry or exit by a nonmanufacturing firm in Tennessee has a diminished impact on manufacturing firm entry or exit, which is driven more by national (or international) market conditions.

Specifically, a single manufacturing exit is shown to cause approximately 15 nonmanufacturing exits in the short run and 24 nonmanufacturing exits once cumulative effects are considered. On average, the size of a manufacturing firm at the time of its exit was 8.5 employees, while for a nonmanufacturing firm it was 2.5 employees. Therefore, when a manufacturing firm exits, there is an average loss of 38 nonmanufacturing jobs immediately and 60 when cumulative effects are considered. As in the case of entry, the employment effects associated with firm exit should be interpreted cautiously, since they do not account for employment changes in surviving firms.

TABLE 1
AVERAGE FIRST (LAST) YEAR EMPLOYMENT OF ENTRANTS (EXITING FIRMS) (1980-1985)

	Entry	Exit
Manufacturing	18.7	8.5
Nonmanufacturing	3.7	2.5

Effects of Manufacturing Entries

The implications of traditional economic base theory are not, however, uniformly supported. For instance, contrary to the foundations of economic base theory, the study found both an instantaneous and lagged causal effect from nonmanufacturing firm entry and exit to manufacturing firm entry and exit. While this effect is statistically strong, the magnitude of the feedback was found to be small. In particular, in the short run, the entry of one nonmanufacturing firm leads only to the entry of .13 manufacturing firms; and in the long run, a nonmanufacturing entry causes entry of .05 manufacturing firms. Similarly, the results indicate that each exit of a nonmanufacturing firm leads to the demise of only .05 manufacturing firms.

The much stronger quantitative impact of manufacturing activity (both entry and exit) on nonmanufacturing activity can be explained by at least two factors. First, the relative sizes of entering and exiting manufacturing firms are notably larger than their nonmanufacturing counterparts. This can be seen in Table 1, which displays the sizes of entering and exiting firms for their first and last years of activity, respectively.

Second, it seems that nonmanufacturing firms are more locationally dependent on manufacturing firms than manufacturing firms are on nonmanufacturing firms. This is almost certainly because manufacturing firms tend to have wider geographic markets for their products than do nonmanufacturing firms. As a result of these wider geographic markets for manufacturing firms, an entry or exit by a nonmanufacturing firm in Tennessee has a diminished impact on manufacturing firm entry or exit, which is driven more by national (or international) market conditions.

A disaggregated analysis provided several insights into the similarities and differences in the entry and exit relationships that exist across various industries and regions within Tennessee. Among the detailed industry results, we found strong evidence of instantaneous bidirectional causality for both entry and exit between Manufacturing and Services; Finance, Insurance, and Real Estate (FIRE); and Trade. For entry, only trade and manufacturing exhibited lagged bidirectional causality. Manufacturing entry was seen to lead to 1.16, .77, and 2.88 entrants in Services, FIRE, and Trade, respectively. This indicates that manufacturing entry will have the largest quantitative impact on entry into the Trade industry, while causing relatively little new activity (in the form of new firms) in FIRE.

Conversely, entry by a firm in Services, FIRE, or Trade leads to entry of .23, 1.2, and .32 manufacturing firms, respectively, indicating that while the overall impact of nonmanufacturing firm entry on manufacturing firm entry is small, the specific impact on manufacturing entry depends significantly on which of the various nonmanufacturing industries is experiencing entry. For instance, the results indicate that FIRE entry has a rather large impact on manufacturing entry. This would appear to support the contention that a viable and vibrant Finance, Insurance and Real Estate sector notably improves prospects for entry by manufacturing firms.

The demise of a manufacturing firm was seen to cause the exit (in the long run) of 3.8, 1.6, and 4.8 firms in the Services, FIRE, and Trade industries, respectively. Again, we see a divergence in the sectoral impact associated with the demise of a manufacturing firm. In particular, the Services and Trade industries are most harshly affected. At the same time it appears that FIRE sector firms are somewhat more insulated to the exit of manufacturing firms.

Overall, the ability of FIRE sector entry to attract manufacturing entry, and the relative resilience of the FIRE sector to manufacturing exit would seem to suggest that this sector offers the greatest degree of complementarity with Tennessee's traditional manufacturing base.

Geographical Analysis

In the geographical analysis of entry and exit, strong evidence of instantaneous causality was found for each of the Grand Divisions of Tennessee. Entry and exit in the Middle Grand Division exhibited bidirectional lagged causality in manufacturing and

nonmanufacturing firm entry. Otherwise, generally similar patterns and response levels of entry and exit occur across the geographic regions of the state.

The examination of entry and exit patterns into rural and urban areas of the state revealed both similarities and differences with the statewide and Grand Division analysis. As in the other models, strong evidence of instantaneous bidirectional causality is indicated between basic and nonbasic industries in both urban and rural areas. For the rural-urban partition of the data, however, only rural entry exhibits the lagged bidirectional causality that was pervasive for the statewide results. Also, some differences were noted between the magnitudes of the estimated coefficients in the urban and rural equations. These differences suggest that the economic stimulus (enervation) from firm entry or exit is different across rural and urban areas. For instance, a manufacturing entrant in urban areas leads to an increase of 7.3 nonmanufacturing firms, while a similar entrant into a rural area causes an increase of only 3.4 nonmanufacturing firms.

Entry and Exit in Rural Areas

For a variety of reasons, a special interest has developed among policymakers regarding the nature of firm entry and exit in rural areas of the state, principally because the entry or exit of a given firm in a rural area generally has a more pronounced direct effect on local economic activity than entry or exit in more populous areas. Moreover, several somewhat more subtle, but no less real, fears exist regarding the fragility of economic activity in rural areas. For instance, some concerns have been raised that the loss of one or a few firms in rural areas may actually trigger a larger pattern of subsequent firm exit than in urban areas. Such losses could be due, for example, to the more narrow economic base and the sharp declines in the modest agglomeration economies in rural areas. Also, some concerns have arisen that urban entry patterns may adversely affect economic activity in rural areas, due either to an acceleration of exit from rural areas or the diminution of

TABLE 2
ENTRIES AND EXITS OF TENNESSEE FIRMS
(Seasonally Adjusted)

	ENTRIES		EXITS	
Time	Nonmanufacturing	Manufacturing	Nonmanufacturing	Manufacturing
1973.1	2445	209	1081	68
1973.2	2326	161	1120	78
1973.3	2309	192	1132	84
1973.4	2569	229	1128	84
1974.1	4993*	613	1121	93
1974.2	2178	160	1148	86
1974.3	2161	142	1276	80
1974.4	1958	123	1352	93
1975.1	1846	100	1259	92
1975.2	2018	131	1234	86
1975.3	2359	160	1327	84
1975.4	2073	134	1228	82
1976.1	2158	127	1217	66
1976.2	2358	145	1399	89
1976.3	2435	179	1346	94
1976.4	2227	129	1313	83
1977.1	2255	166	1390	102
1977.2	2521	183	1341	79
1977.3	2512	175	1435	88
1977.4	2505	185	1421	97
1978.1	3496*	168	2805	159
1978.2	2807	150	1491	84
1978.3	2818	160	1647	102
1978.4	2665	180	1543	92
1979.1	2522	174	1612	89
1979.2	2656	186	2156	131
1979.3	2479	177	1689	104
1979.4	2174	149	2089	121
1980.1	2215	144	2025	125
1980.2	1965	125	1842	110
1980.3	2122	126	1819	110
1980.4	2263	135	1710	103
1981.1	2167	129	1840	106
1981.2	2222	144	1847	114
1981.3	2331	130	2436	131
1981.4	2433	137	2447	138
1982.1	2199	121	1718	123
1982.2	2379	129	2313	120
1982.3	2296	135	2106	119
1982.4	2334	115	2074	113
1983.1	2330	134	2011	107
1983.2	2485	143	2018	113
1983.3	2500	173	1786	125
1983.4	2595	138	1838	108
1984.1	2706	177	1924	100
1984.2	2583	167	1955	116
1984.3	2661	161	1975	100
1984.4	2570	161	1935	105
1985.1	2615	142	2014	133
1985.2	2727	147	2004	126
1985.3	2716	135	2018	124
1985.4	2801	159	2038	144
1986.1	2691	155	2054	115
1986.2	2718	133	2073	94
1986.3	2768	140	1977	122
1986.4	2798	152	1596	85

**A regression diagnostics test revealed that these observations constituted "influential" data points. Nevertheless, no qualitative differences emerge from the analysis when these data points are omitted.*

Among the detailed industry results, we find strong evidence of instantaneous bidirectional causality for both entry and exit between Manufacturing and Services, FIRE, and Trade. Among the nonmanufacturing industries, an entry into the FIRE sector is seen to have the largest impact on manufacturing entry. At the same time, the results indicate that the FIRE sector is the most immune from the consequences of manufacturing exit.

observed entry into rural areas.

The short-run impacts of firm entry and exit also appear somewhat different in urban and rural areas. For instance, the data indicate that an entry of a manufacturing firm in rural areas causes 3.4 nonmanufacturing firms to enter, whereas a manufacturing entrant in an urban area causes 7.3 nonmanufacturing entrants. Conversely, the entry by a nonmanufacturing firm in rural areas appears to be more influential in creating manufacturing entry than similar entry would into an urban area (.22 versus .10).

The Data and Empirical Specification

Data used in this study are drawn from a unique data base developed by the Tennessee Department of Employment Security and the Center for Business and Economic Research at The University of Tennessee, Knoxville. For purposes of the study, quarterly data on firm entry and firm exit by industry were drawn from the data base described in the article on page 3. All data have been seasonally adjusted through the use of the Bureau of Census X-11 Seasonal Adjustment program.

Statistics for entries and exits of firms from 1973.1 through 1986.4 are shown in Table 2 and Figures 1 and 2.

RESULTS

Several fundamental results emerged from the analysis of firm entry and exit in Tennessee. First, the basic assumption of economic base theory, that basic firm activity (entry and exit) causes nonbasic firm activity, is strongly confirmed. Manufacturing entry is seen to have a highly significant influence on nonmanufacturing entry. Similarly, it is evident that the exit of a manufacturing firm has both an instantaneous and lagged causal effect on nonmanufacturing firm exit. Moreover, the effects of a manufacturing firm exit on subsequent nonmanufacturing exit is seen to be quantitatively large.

Among the nonmanufacturing industries, an entry into the FIRE sector is seen to have the largest impact on manufacturing entry. At the same time, the results indicate that the FIRE sector is the most immune from the consequences of manufacturing exit.

As is often the case in economic analysis, this research has in many ways raised more questions than it answers. Nevertheless, we believe that the results shed light on some of the fundamental relationships of firm entry and exit into various industries and regions within the state. Since knowledge of such relationships lies at the heart of any well-conceived strategy for economic development, the findings may contribute to the enhancement of a sound policy.□

FIGURE 1
MANUFACTURING FIRM
ENTRIES AND EXITS

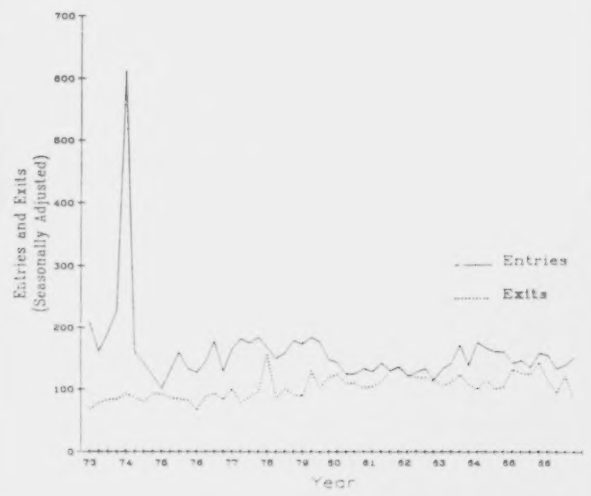
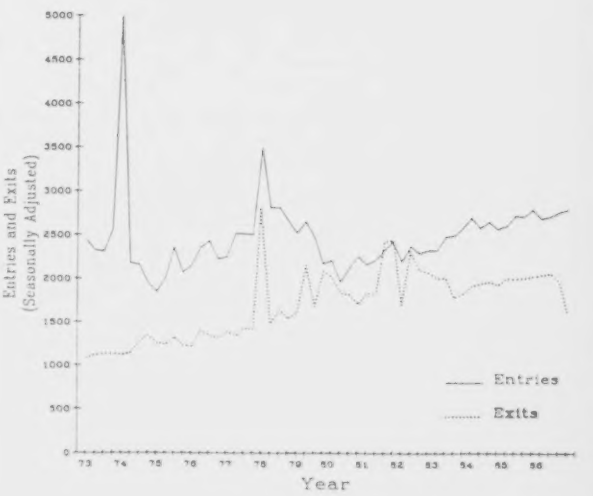


FIGURE 2
NONMANUFACTURING FIRM
ENTRIES AND EXITS



FORECASTING UNEMPLOYMENT INSURANCE TRUST FUNDS IN TENNESSEE

by David M. Mandy

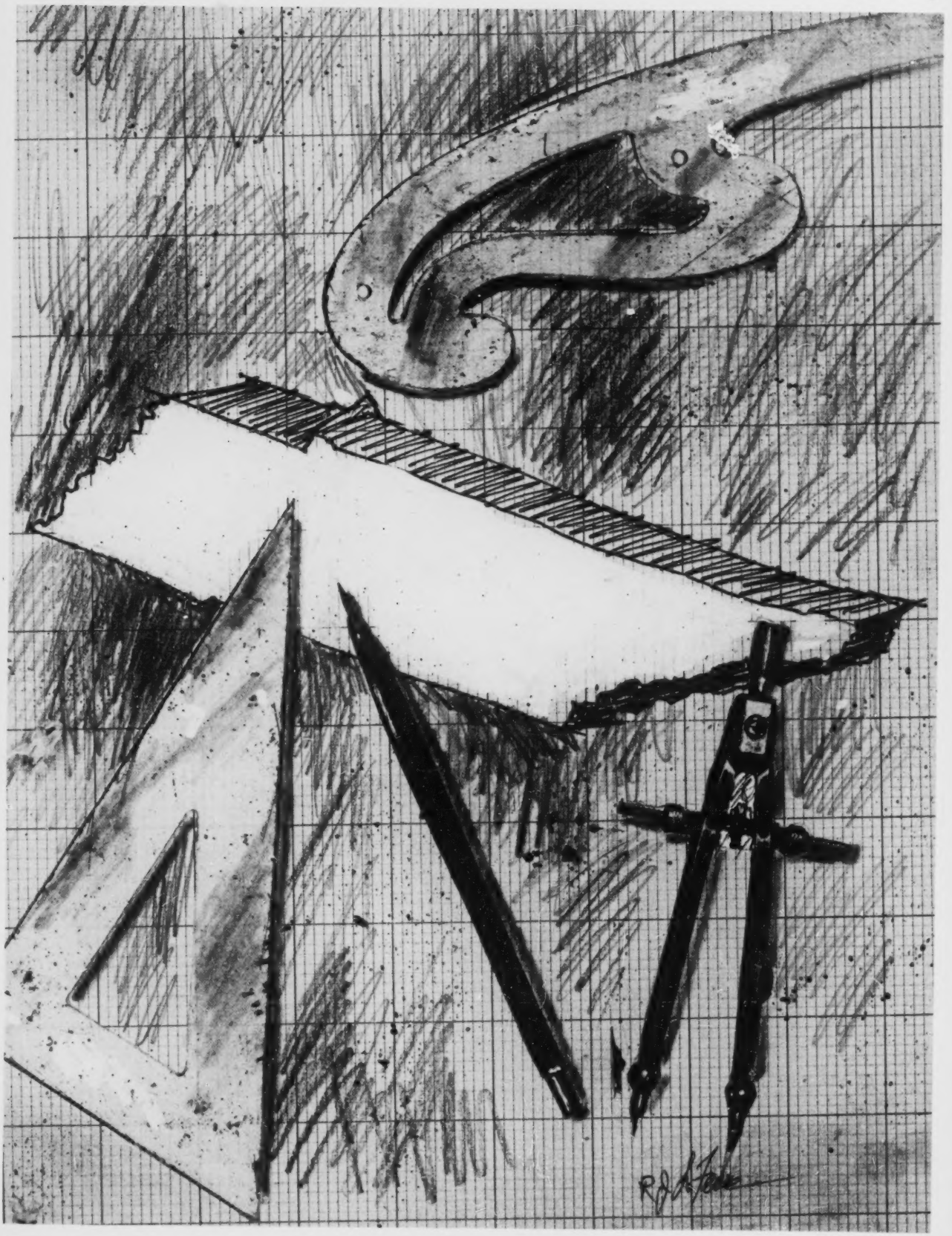
Most UI models are designed to be used by all states. This factor and other inadequacies necessitate an alternative approach to UI forecasting.

A deteriorating solvency position in many state unemployment insurance (UI) trust funds has prompted renewed efforts to forecast UI variables. The major goal of these forecasting efforts is to anticipate trust fund balances so that appropriate changes can be made to avoid insolvencies. Numerous UI forecasting models have been developed to make it possible for states to simulate the effects of various policy changes. The most comprehensive model, developed by Mercer Associates (1977) for the U.S. Department of Labor, captures much of the institutional structure of the UI system. However, there are basic problems involved with nearly all models.

Problems of Existing Models

First, most UI forecasting models are designed so that they can be used by all states. As a result, they do not fit the needs or the data of an individual state as closely as might be desired. Secondly, states using these models are required to make assumptions regarding future unemployment rates, wages, and the labor force. Depending on the methods used by a particular state, such assumptions may or may not be well founded. In either case, the assumptions may not be based on sound econometric forecasts of the state.

All these inadequacies prompted the Tennessee Department of Employment Security to take an alternative approach to UI forecasting. The sensitivity of trust fund activity to economic performance and the simultaneity of many UI variables suggest that an econometric model is the appropriate forecasting tool. Therefore, the Tennessee



Tax rates are determined by the unemployment history of a firm and the solvency of the trust fund. Most states, including Tennessee, devise an "experience rating" rule which compares the premium and benefit histories of each firm. Firms that are measured to be heavy drains on the trust fund are charged a higher tax rate.

Employment Security Insurance Forecasting Model (TESIM) was designed by the Center for Business and Economic Research and the Tennessee Department of Employment Security primarily as a simultaneous equation econometric model. TESIM was developed using only Tennessee data, so that the equations are tailored to the idiosyncrasies of Tennessee.

However, strategic planning is also an important component of the UI forecasting environment. In discussing the crucial role of forecasting in strategic planning, Naylor (1983) and Capon and Hulbert (1985) state that forecasts for strategic planning should incorporate multiple scenarios that reflect alternative exogenous assumptions. Jenkins (1982) also emphasizes the importance of building strategic planning capability into a forecasting model.

TESIM is designed to fulfill strategic planning needs as well. Many of the policy parameters which are also used by the Mercer model are incorporated into TESIM in a way that permits simulations of policy changes. This addresses one shortcoming of some UI forecasting models. Unlike the Mercer model, however, the economic forecasts that drive TESIM are derived from the quarterly Tennessee Econometric Model. TESIM is a satellite model of this larger model of the Tennessee economy. This arrangement reflects the environment in which the UI system operates, and the satellite relationship makes the exogenous assumptions underlying TESIM forecasts more broadly based than the assumptions that underlie a typical use of other models.

Structure of TESIM

Changes in the balance of a UI trust fund can be disaggregated into two basic parts: flows into and flows out of the fund. The flows into the fund are disaggregated further into four revenue categories: premiums, reimbursements, interest, and interstate transfers. Flows out of the fund consist of two expenditure categories: regular and extended benefits.

Premiums. Premiums constitute the majority of trust fund revenues. These payments come from a tax rate applied to the "taxable wages" of most employers.

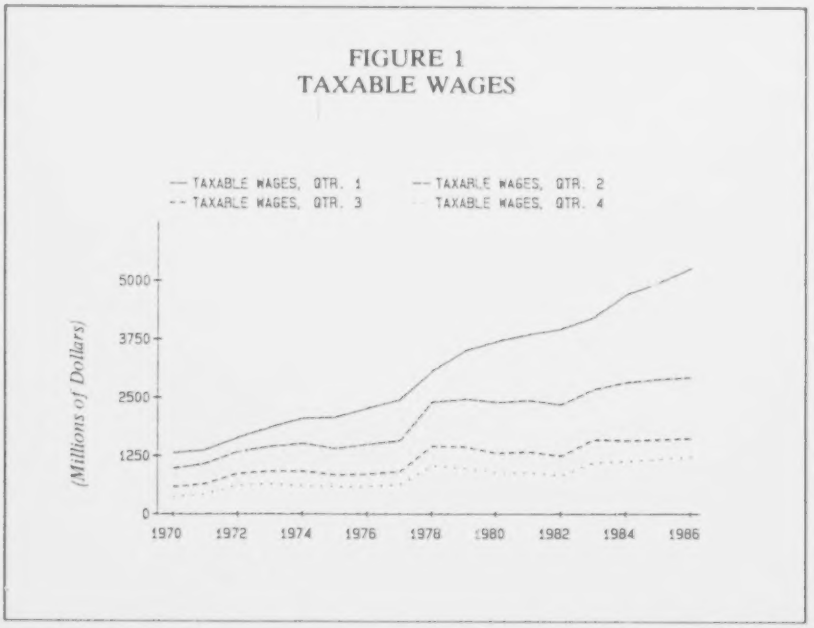
Taxable wages are the wages paid to each employee in a calendar year up to some per-employee ceiling. Currently, the taxable wage ceiling in Tennessee is $7,000. Hence, the ceiling becomes binding on many employees in the first quarter and on the average employee in the second quarter of the year. This introduces extreme seasonality into the taxable wage data. Figure 1 illustrates taxable wages in Tennessee separately for each quarter of the year. The seasonality is evident in the different levels of the lines plotted in the figure.

Tax rates are determined by the unemployment history of a firm and the solvency of the trust fund. Most states, including Tennessee, devise an "experience rating" rule which compares the premium and benefit histories of each firm. Firms that are measured to be heavy drains on the trust fund are charged a higher tax rate. However, the rates imperfectly reflect the unemployment history of the firms, so that firms with low average unemployment rates subsidize those with high average unemployment rates. In addition, as the trust fund balance decreases, tax rates for all firms increase automatically in order to maintain solvency. This makes the UI tax pro-cyclical, increasing the need to avoid trust fund insolvencies. Some employers may be subject to special rates if their history is too short to determine an experience rating or if they are in an industry with unusual unemployment experience.

Tax rates can be forecast either by an estimated equation for the average tax rate or by using a distribution of firms across the experience rating continuum. If an average tax rate is used, the experience rating system is bypassed and the array of tax rates that are possible is not part of the premium calculation. Also, since alternative tax tables are often considered for adoption, an average tax rate approach is not adequate for strategic planning purposes.

For this reason, TESIM uses the distribution approach. Future distributions

FIGURE 1
TAXABLE WAGES



Interest accumulates from investment of the trust fund balance and is credited to the trust fund the next period. The significance of this revenue source declines during recessions as the trust fund balance decreases. Higher interest rates can bolster these revenues, however. In general, interest revenues depend on the portfolio of assets purchased with the trust fund balance.

are predicted by applying the forecast growth rates of taxable wages and benefits to the taxable wages and benefits of each experience rating category. The experience rating rule is then applied to each category to obtain the new experience rating for the category.

Once the distribution is decided, the forecasted trust fund balance is combined with the experience rating of each category to obtain the legislated tax rate for that category. Multiplying this rate by expected taxable wages for the category yields the premium forecast for the category. Aggregating across categories yields a total premium forecast. By using a different set of tax rates, the impact of proposed legislative changes in the tax tables can be assessed.

Despite the advantage of alternative tax table simulation capability, this method suffers from several shortcomings. The assumption that each category will experience average growth in taxable wages and benefits is clearly inaccurate. Still, without estimating wages and benefits for each category separately, there is no solution to this problem, and economic data are unavailable for estimating these categories individually. Furthermore, the premium-paying employers who are subject to special rates are not included in the available distribution. Hence, this premium forecast always understates true premiums. The understatement is systematic, however, and true premiums are easily forecast as a function of the sum over all experience-rating categories. A third problem is the significant data requirement of this approach. Barnow and Vroman (1986) discuss this problem as it applies to the Mercer model. For TESIM, only four years' distributions were available.

Reimbursements, interest, and interstate transfers. Reimbursements are made by a small class of employers, including government and nonprofit institutions not subject to the premiums tax. These employers simply reimburse the trust fund for any benefits paid to their employees. Reimbursements are usually repaid one quarter after the benefits are dispersed.

Interest accumulates from investment of the trust fund balance and is credited to the trust fund the next period. The significance of this revenue source declines during recessions as the trust fund balance decreases. Higher interest rates can bolster these revenues, however. In general, interest revenues depend on the portfolio of assets purchased with the trust fund balance.

Interstate transfers are payments between states to compensate for claims made in one state when the associated premiums were paid in a different state. This occurs when an employee crosses state lines between home and work. Only the net transfers are estimated by TESIM. These depend on the net migration of benefit recipients, and there is no obvious structure to be used in forecasting this variable. It is subject to seasonal and cyclical variability as well as potential structural changes in the commuting patterns between states.

Benefits. Regular benefits are paid to an unemployed claimant according to a benefit formula. First, the claimant must be eligible for UI benefits, and the requirements vary among states. Meeting the eligibility requirements entitles the claimant to a specific number of weeks of UI benefits. The amount of the weekly benefit is based on the claimant's previous earnings, subject to some maximum and minimum amounts. Weekly benefit amounts are also influenced by part-time work and the number of dependents the claimant has, to varying degrees.

Extended benefits are paid during cyclical downturns when the duration of unemployment increases. Extended benefit periods are determined by a rule which compares current and past unemployment rates. During an extended benefit period, eligible claimants who have exhausted their

regular benefits can receive UI payments for additional weeks. The cost of extended benefits is shared between the Federal government and the states. Hence, the sum of regular and extended benefits overstates the flows out of a state UI trust fund.

Performance of TESIM

The accuracy of the TESIM forecasts was tested by re-estimating the model for earlier years and then forecasting over the withheld observations. Six eight-quarter forecasts were generated in this manner, beginning in each quarter from the fourth quarter of 1983 through the first quarter of 1985. Data limitations prevented simulations of quarters prior to the fourth quarter of 1983. Estimations were conducted using data through the quarter preceding the first forecast quarter in each case.

For each forecast, percent forecast errors for each endogenous variable were calculated. These errors were then aggregated into mean absolute percent errors (MAPE) by forecast quarter. These errors are reported for the most important TESIM variables in Table 1.

The average benefit payment exhibits the smallest forecast errors, averaging 1.3 percent over all forecast quarters. A less favorable performance is displayed by total weeks compensated, as the MAPE increases from 5 percent in the first forecast quarter to 10.6 percent before decreasing to 9 percent in the eighth forecast quarter. The three quarters from 1985.02 to 1985.04 are particularly inaccurate regardless of where they fall in the forecast range, and this is largely responsible for the magnitude of the total weeks compensated MAPEs. These two variables combine to produce an average error in total benefits of 8.7 percent over all forecast quarters and an error pattern that mirrors total weeks compensated.

On the revenue side of the trust fund, the MAPE for taxable wages hovers around 2 percent before increasing in the last three quarters of the forecast period. Despite this accuracy, the transformation to total premiums produces an average error in total premiums of 8.9 percent. The MAPE for total premiums peaks in the third forecast quarter. Like weeks compensated, this variable also performs poorly in certain quarters. Large positive percentage errors occur regularly in the fourth quarter of 1984 and the first quarter of 1985, increasing the average. It should be noted that premiums are relatively low in these quarters, so that the error in absolute terms is not as large as the percent error may suggest.

In general, the forecasts of later quarters are more accurate as more data are added to the equations. Therefore, the MAPEs in Table 1 may overstate the errors TESIM will generate in the future.

The errors displayed by the trust fund balance summarize the errors of its component parts. The MAPE for the balance increases steadily with one exception from 6.2 percent to 14.8 percent from the first to the eighth forecast quarters. The fact that the trust fund balance is a stock that is forecast by estimated flows reinforces the tendency for forecast errors to increase in later forecast quarters. Any errors in the balance forecast become cumulative unless the errors in the component flows change direction. In general, premiums are greater than their forecast values and benefits are less than their forecast values. Thus, the change in the trust fund balance is usually larger than the forecasted change. A change in the direction of this error is rare, so that errors in the trust fund balance accumulate, leading to a large MAPE by the eighth forecast quarter. From the standpoint of trust fund solvency, this is not a significant problem, since the direction of the error implies that the trust fund balance will be larger than the forecast value. Hence, the model tends to err on the conservative side.

Another measure of the perfor-

TABLE 1
TESIM MAPE BY FORECAST QUARTER

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	5th Quarter	6th Quarter	7th Quarter	8th Quarter	Average
Trust Fund Balance	6.23	8.78	7.08	8.07	10.02	11.87	13.58	14.84	10.06
Taxable Wage	2.15	2.10	1.88	2.07	1.97	2.76	3.24	5.00	2.65
Average Premium Rate	8.24	10.63	10.14	6.07	8.29	9.38	9.32	4.28	8.29
Premiums	6.56	8.06	11.15	11.06	6.27	7.80	9.51	10.43	8.86
Total Weeks Compensated	5.02	6.03	8.43	10.58	10.15	9.22	9.81	9.01	8.53
Average Benefit Payment	0.61	1.05	1.46	1.7	1.67	1.79	1.31	0.91	1.32
Benefits	5.49	5.69	8.55	10.63	10.40	9.28	10.28	9.32	8.70

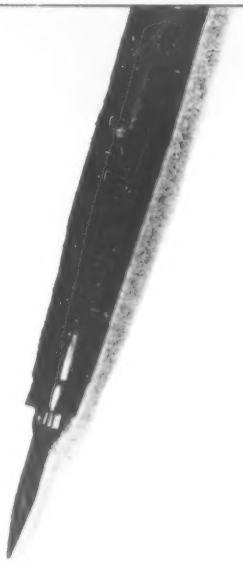
The TESIM model is constructed to fulfill two major goals: to provide the most accurate forecasts possible for the UI system and to incorporate important policy parameters into the model so that policy changes can be simulated.

mance of TESIM is its ability to provide decision support for strategic planning. This goal is largely met by the construction of the model. The taxable wage ceiling, tax rates, experience rating rule, and maximum benefit amount are all explicitly present in the model. Changes in these variables can be simulated by simply changing the parameters of the model. Of course, the usual caveats concerning forecasting outside the range of historical observation apply here.

The most significant weakness of TESIM is the lack of policy parameters related to the benefit formula and eligibility. The only explicit parameter is the maximum weekly benefit amount. Eligibility requirements and benefit rules can be complicated and difficult to model. However, changes in these formulae are often considered, and the strategic planning capabilities of the model would be significantly improved if the impact of alternative benefit legislation could be easily evaluated. The problem is that the benefit rules affect individual claimants differently, so that any attempt to explicitly incorporate the rules into the model must use a distribution of beneficiaries to simulate the impact of rule changes. This would be similar to the approach currently in use on the revenue side of the model and would likely suffer similar shortcomings. As experience is gained with distribution methods in general, a reformulation of the benefits side of the model may be in order.

SUMMARY

The TESIM model is constructed to fulfill two major goals: to provide the most accurate forecasts possible for the UI system and to incorporate important policy parameters into the model so that policy changes can be simulated. These goals are not necessarily congruous. To the extent that model structure is dictated by simulation capability, forecasting accuracy may be sacrificed. TESIM incorporates most of the significant policy parameters and is constructed to minimize forecasting errors within this framework. The result is larger forecasting errors than are desirable. Many alternatives were investigated while building the TESIM model. High forecasting errors are testimony to the difficulty of modeling the UI system in a way that meets the needs of UI policymakers. Despite the inaccuracies, policy simulation is important enough to make TESIM a useful tool.□



REFERENCES

1. Barnow, Burt, and Wayne Vroman. *An Analysis of UI Trust Fund Adequacy*. Final Report Submitted by ICF Incorporated for Contract No. 99-5-3024-04-090-01. 1986.

2. Capon, Noel, and James M. Hulbert. "The Integration of Forecasting and Strategic Planning." *International Journal of Forecasting* 1 (1985) 123-33.

3. Farebrother, R. W. "The Durbin-Watson Test for Serial Correlation When There Is No Intercept in the Regression." *Econometrica* 48 (1980) 1553-63.

4. Fox, William F., and David A. Hake. "Economic Forecasting in Tennessee." *Survey of Business*, Center for Business and Economic Research, The University of Tennessee, Knoxville 19 (1984) 30-7.

5. Hultman, Charles W., and Charles G. Renfro. *Analysis of an Unemployment Insurance Projection Model*, Office of Research, College of Business and Economics, University of Kentucky, Lexington: 1979.

6. Jenkins, Gwilym M. "Some Practical Aspects of Forecasting in Organizations." *Journal of Forecasting* 1 (1982) 3-21.

7. Johnston, J. *Econometric Methods*. McGraw-Hill, New York: 1984.

8. Ladin, Jay. *Simulating the Impact of the Next Recession on Unemployment Trust Funds: The Maryland Case*. Department of Fiscal Services, Maryland General Assembly: 1986.

9. Mercer Associates. *State Unemployment Insurance User's Manual for Projection Program and Financial Forecast Program*. 2 Volumes. Prepared for Division of Actuarial Services, UI Service, U.S. Department of Labor: 1977.

10. Naylor, Thomas H. "Strategic Planning and Forecasting." *Journal of Forecasting* 2 (1983) 109-18.

The author gratefully acknowledges the assistance of Tim Ferguson and Martha Miles, Tennessee Department of Employment Security , and Melissa Wood, CBER.

IMPACT OF THE UNIVERSITY OF TENNESSEE ON THE KNOXVILLE ECONOMY

by Matthew N. Murray

Income-generating activities, cultural effects, and human capital and fiscal effects of UT all have far-reaching impacts on the local economy.

The University of Tennessee engages in numerous activities which have direct and indirect impacts upon the local economy. Most conspicuous is the University's role as the demander of various goods and services. As of November 1985, the date on which numbers in this study are based, The University of Tennessee, Knoxville (UTK), employed over 11,000 full-time and part-time employees whose services generated for the Knoxville area income which would not have accrued in the University's absence. The presence of a large student body (25,000 in 1985) also generates additional income for the Knoxville area, both in terms of University expenditures incurred on its behalf and direct student expenditures on goods and services. There is income generated by University visitors as well, whether such visitors are drawn by athletic events or other University-sponsored activities such as concerts or conventions In addition to the income-generation aspects of the University's presence, there are nonquantifiable cultural effects and difficult-to-quantify human capital and fiscal effects.

In an attempt to estimate the effect of various University-specific and University-related activities on the local economy, this analysis focuses on the impact of The University of Tennessee, Knoxville, the School of Veterinary Medicine, the Agricultural Experiment Station and Agricultural Extension Service, The University of Tennessee Memorial Research Center and Hospital, and of the University-wide Administration on the Knoxville Metropolitan Statistical Area (MSA). Estimates are also

A somewhat more subtle indirect impact of the University's presence relates to "spinoffs" from University-specific activities. For example, many University faculty members engage in outside research and consulting that is closely related to work conducted within the University. Such activities generate income that is spent and re-spent in the local economy.

provided on the impact of students and visitors to the UTK campus. All of these activities affect the local area -- a fairly large portion of East Tennessee defined here as the Knoxville MSA, including Knox, Blount, Anderson, Grainger, Sevier, Union, and Jefferson counties.

The type of impact evaluated in this report consists of the income generated from University-related activities--for example, wage and salary payments to University employees. There are two components to this impact. The first is the direct effect attributable to the initial income generated by University activities. The second is the indirect effect attributable to the spending and respending of this income.

It is important to emphasize that this study is concerned with income rather than expenditures, since it is believed that income more accurately reflects an activity's impact on both individuals and the local economy. Other than for wages and salaries paid to University employees, data are not directly available on the income generated from University activities. Therefore, it is necessary to convert University expenditures into income before making estimates of the direct plus indirect, or total impact.

Leakages and the Substitution of Economic Activity

The direct impact of University expenditures on the local economy has as its source the initial spending by the University, students, staff, and visitors on various goods and services. But not all of such expenditures can properly be identified as having a local impact. First, there is the problem of leakages. Some of these expenditures are made to purchase goods and services outside the Knoxville MSA (for example, the purchase of computer hardware from a regional distributor located outside the Knoxville area--an expenditure which therefore leaks out of the local economy and affects another region). Similarly, a faculty member who travels to an out-of-state convention may incur $750 in expenses. However, except for a commission paid to a local travel agent and a small portion of airfare expenses retained by a local airline for local wage and overhead costs, most of such expenditures can be expected to impact upon the locality in which the convention takes place, rather than on the Knoxville MSA.

Second, even a one-dollar purchase or expenditure made within the confines of the Knoxville MSA need not have a one-dollar local impact, because the University-induced expenditure may be a substitute for other expenditures which would have been made in the University's absence. For example, some of those who attend UTK football or basketball games may, in the absence of the University, have attended a local high school football game. As such, that attendance represents merely a substitution of one economic activity (UTK football) for another (high school football). To the extent that individuals spend more on UTK football than high school football, a positive gain may result.

Indirect Income Effects and the Income Multiplier

In addition to these direct or first-round income generation effects of University activities, there are also indirect income effects. These indirect effects result from the multiplier process, which means that each dollar spent in the local economy is received by the suppliers of various goods and services as income. The recipients of such income, however, also spend in the local economy, and these additional expenditures are in turn received by the suppliers of goods and services who subsequently respend in the local economy. To capture these indirect income generation effects, use is made of an income multiplier. As an example, an income multiplier of 2 indicates that each dollar of income generates a total of $2 of income via this spending and respending process.

The multiplier used in this study, which has a value of 1.75, was drawn from a 1981 impact study of the University on the local economy, *The Direct and Indirect Impact of The University of Tennessee on the Knoxville Metropolitan Area, 1980-1981,* by Niles C. Schoening. Thus for each initial dollar of income generated by University-induced activities in the Knoxville MSA, a total of $1.75 in income results: one dollar in direct income and 75 cents in indirect income.

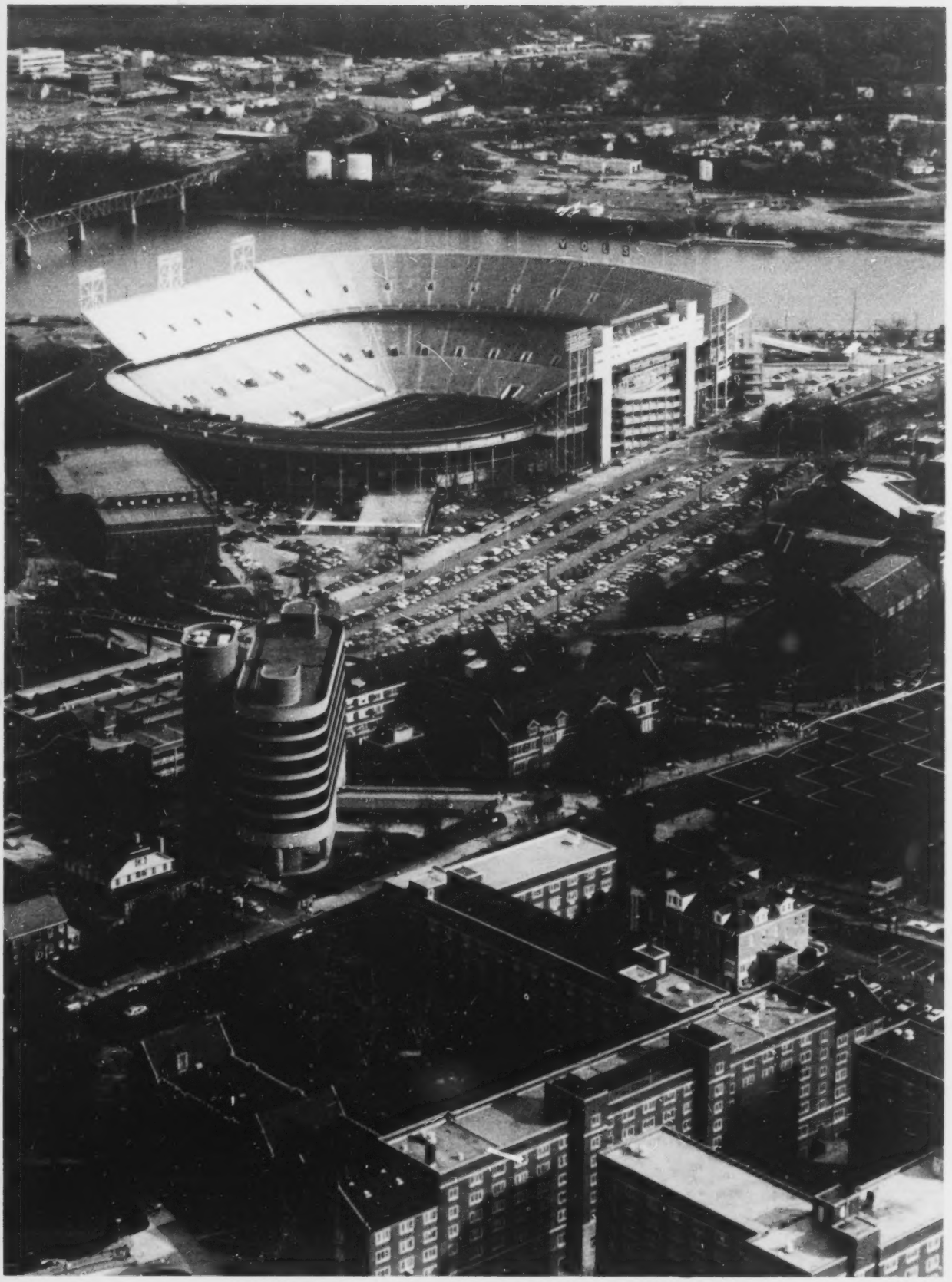
IMPACT ESTIMATE

Of $364 million in University-specific expenditures, there are leakages amounting to $95 million, which yield local level expenditures of $269 million. After conversion of these local expenditures into income, the direct income generated by all University units is estimated to be $206 million. Finally, by including income generated indirectly by the multiplier process, the total university-specific impact amounts to $360 million.

The relative importance of various University units is illustrated in Figure 1. Of the $360 million in total income for all University units, UTK contributes $221 million, or 61 percent. The smallest impact is attributable to the School of Veterinary Medicine (2.7 percent, or $10 million).

Combining the estimates of University-specific impacts with those attributable to visitors and students yields an estimate of the overall effect of the University's presence; these estimates are summarized in Table 1. The total income impact amounts to $413 million. As can be seen from Figure 2, 87 percent of the total effect is due to University-specific activities, with the remainder due to visitor and student expenditures.

Additional insight can be gained from closer scrutiny of Table 1. A one-dollar University-related or University-specific expenditure on average yields 79 cents in Knoxville MSA expenditures, with leakages amounting to 21 cents. On average, 51 cents in direct income is generated from the initial one-dollar expenditure. In addition, the multiplier process yields 38



cents in indirect income. Thus in total, the one-dollar University-induced expenditure yields a total of 89 cents in income, allowing for both direct and indirect effects. However, these results are in a sense biased by the relatively smaller personal income factors specific to student and visitor expenditures. A one-dollar University-specific expenditure yields 57 cents in direct income and 42 cents in indirect income, for a total effect of 99 cents.

OTHER IMPACTS

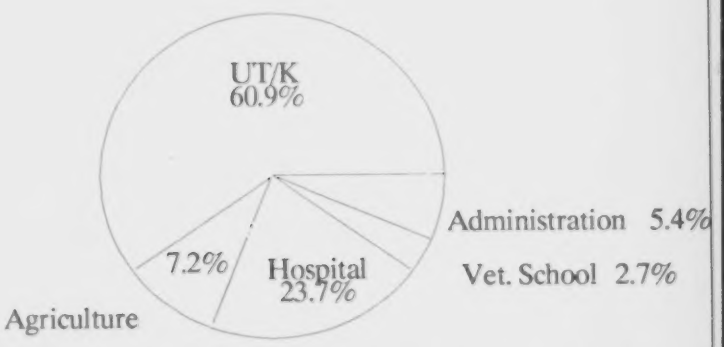
University-Related Spinoffs

A somewhat more subtle indirect impact of the University's presence relates to "spinoffs" from University-specific activities. For example, many University faculty members engage in outside research and consulting that is closely related to work conducted within the University. Such activities generate income that is spent and respent in the local economy.

There are also University alumni residing in the area who bring economic activity to the area. A most obvious and current example of the latter is the proposed construction of a Whittle Communications office complex in downtown Knoxville.

Other firms, for example, Perceptics and Phyton, have been established locally by present or former University staff. Perceptics, an electrical engineering (image processing) firm established in 1981 by a University professor and one of his students, currently employs about 55 individuals and reports $6.5 million (1986) in revenues. The firm is currently under contract with the U.S. Customs Service for development of an image processing license plate reader. Phyton engages in the initial production and growth (cloning) of various plant species which are then

FIGURE 1
PERCENT DISTRIBUTION
OF UNIVERSITY-SPECIFIC ACTIVITIES



Source: Report of the Treasurer 1985: Supplemental Schedules and Appendices (Knoxville, Tennessee: The University of Tennessee, 1986)

TABLE 1
THE ESTIMATED DIRECT AND INDIRECT EFFECT OF THE UNIVERSITY OF TENNESSEE ON THE KNOXVILLE MSA: ALL UNIVERSITY-INDUCED ACTIVITIES, 1985-86
(Dollar Amounts in Thousands)

Activity	Total Expenditures	Knoxville MSA Expenditures	Personal Income Factor[1]	Direct and Indirect Income	
				Amount	Percent
UTK	$212,018.2	$169,941.7	0.74	$220,841.5	53.4
Agricultural Experiment and Extension	40,696.3	17,334.4	0.86	26,213.9	6.3
University Hospital	83,821.8	62,397.4	0.79	86,050.2	20.8
School of Veterinary Medicine	8,891.3	6,573.2	0.85	9,792.5	2.4
Administration	18,193.1	12,559.9	0.80	17,518.6	4.2
Students	92,405.5	92,405.5	0.31	50,130.0	12.2
Visitors	5,800.6	5,800.6	0.27	2,740.8	0.7
Total	$461,826.8	$367,012.7	0.64	$413,287.5	100.0

1. For a discussion of the derivation of the personal income factors, see Matthew N. Murray, An Evaluation of the Economic Impact of the University of Tennessee on The Knoxville Metropolitan Statistical Area: 1985-1986, Center for Business and Economic Research, College of Business Administration: March 1987.

While there may be tax revenue gains attributable to the University's presence, there are also additional public-sector costs associated with the necessary increase in publicly provided goods and services. A larger University area population requires greater expenditures for fire and police protection, road construction, road maintenance, and other services.

distributed to greenhouses for further growth and development until ready for retail sale. The firm was established by two University professors and currently employs approximately 100 workers, most of them unskilled. The effect of this type of activity can be expected to be substantial.

Cultural Effects

Another nonquantifiable, yet obvious, impact the University may have on the local economy relates to various cultural events. Numerous varieties of concerts, art exhibits, and theatrical events are either directly sponsored by the University or take place in University-owned facilities. Many of these activities generate income for the local economy (to the extent that they do not substitute for another activity); it can also be argued that these cultural contributions provide intangible and unquantifiable benefits in terms of a better quality of life and may be a strong drawing card for both firms and workers considering relocation in East Tennessee.

Public-Sector Effects

Public-sector effects resulting from the University's presence can be classified into two categories. The first category relates to revenue generation effects attributable to the increased economic activity induced by the University's presence. Increased local sales of goods at the retail level lead to a substantial increase in sales tax revenues. (However, sales tax revenues are remitted partly to the state government, and only a portion is directly returned to the local area, with the remainder returned indirectly via various state-level expenditures.) The local property tax base is also affected. On the positive side, because of a larger local population and higher property values, the base is expanded and associated revenues are increased. On the negative side, the University's nonprofit status leads to property tax exemption on University-held property. Various license-fee and user-fee revenues are also increased. To the extent that these fees truly reflect the costs of allowing such activity, no net gain results. Also, any local "gains" are minimized by the fact that such revenues are remitted to the state government.

While there may be tax revenue gains attributable to the University's presence, there are also additional public-sector costs associated with the necessary increase in publicly provided goods and services. A larger University area population requires greater expenditures for fire and police protection, road construction, road maintenance, and other services. In general, while the University's presence may generate greater state and local tax revenues, there is also a commensurate increase in required public services.

Human Capital Effects

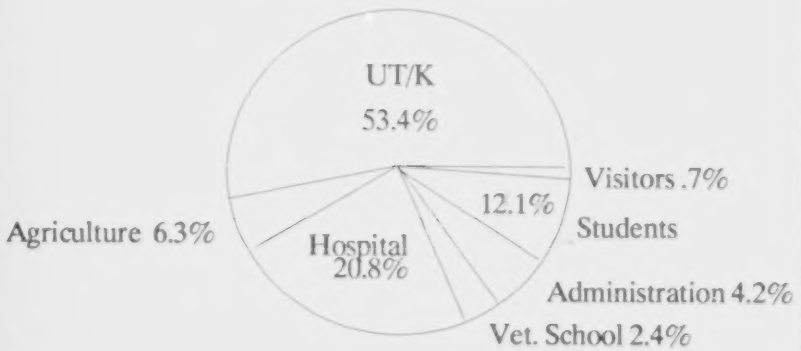
The University's primary goal is to train and educate students. In so doing, students accumulate what is known as "human capital." The human capital investment process of students may have two effects. It is argued, first, that an education makes an individual a better citizen, and second, that it increases the individual's earnings capacity. Both effects are clear gains to society's investment in the education process.

Not all of these human capital-related gains resulting from the education of students at The University of Tennessee directly accrue to the Knoxville MSA. As is the case with University-related expenditures, there is a leakage (brain drain) as students educate themselves and subsequently leave the area for employment elsewhere.

Costs Associated with the Presence of the University

The estimates above do not take into account potential costs resulting from University-induced activities. In other words, estimates reported above are not a measure of net benefits. These potential costs include factors such as urban congestion, noise problems associated with athletic events, traffic and parking problems near the UTK campus, etc. Although such costs are evident, it is clear that even the most thoughtful and comprehensive evaluation of these costs would not generate a substantial burden associated with the University's presence; net benefits

FIGURE 2
PERCENT DISTRIBUTION OF
TOTAL UNIVERSITY IMPACT
BY UNIVERSITY ACTIVITY



Source: Report of the Treasurer 1985: Supplemental Schedules and Appendices (Knoxville, Tennessee: The University of Tennessee, 1986).

TABLE 2
THE ESTIMATED DIRECT AND INDIRECT EFFECT OF THE UNIVERSITY OF TENNESSEE ON THE KNOXVILLE MSA: ALL UNIVERSITY UNITS, 1985-86
(Dollar Amounts in Thousands)

Expenditure Category	Total Expenditures	Knoxville MSA Expenditures[1]	Personal Income Factor	Income Generated Directly	Income Generated Indirectly	Total Income Amount	Total Income Percent
Payroll	$210,266.5	$193,636.6	1.00	$193,636.6	$145,227.5	$338,864.1	94.1
Transportation	8,371.2	1,168.2	0.17	193.7	145.3	339.0	0.1
Utilities	12,142.0	12,142.0	0.13	1,578.5	1,183.8	2,762.3	0.8
Communications	7,057.5	70.2	0.84	59.0	44.2	103.2	0.0
Maintenance	10,762.2	2,585.7	0.31	801.6	601.2	1,402.7	0.4
Supplies	17,760.8	4,762.4	0.06	285.7	214.3	500.1	0.1
Construction	17,847.0	17,847.0	0.15	2,677.1	2,007.8	4,684.91.3	1.3
Equipment	13,487.2	3,709.9	0.11	408.1	306.1	714.1	0.2
Stores for Resale	26,346.5	13,508.5	0.08	1,080.7	810.5	1,891.2	0.5
Other	39,579.9	19,376.0	0.27	5,231.5	3,923.6	9,155.1	2.5
Total	$363,620.7	$268,806.5	0.77	$205,952.4	$154,464.3	$360,416.7	100.0

1. Expenditures identified as taking place in the Knoxville MSA, which includes Knox, Blount, Anderson, Grainger, Sevier, Union, and Jefferson counties.

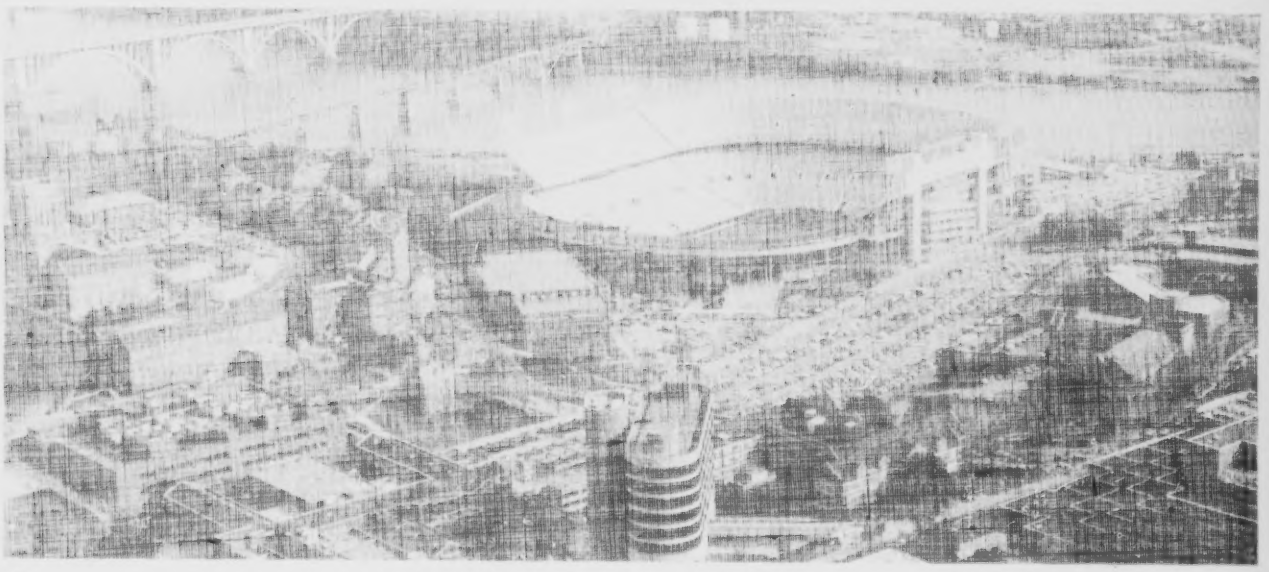
would clearly remain positive and be quite substantial in size.

SUMMARY

Table 1 presented a summary of the individual unit effects of UTK; the Agricultural Experiment Station and Agricultural Extension Service; The University of Tennessee Memorial Research Center and Hospital; the School of Veterinary Medicine; and the impact of University-wide Administration (i.e., Treasurer's Office).

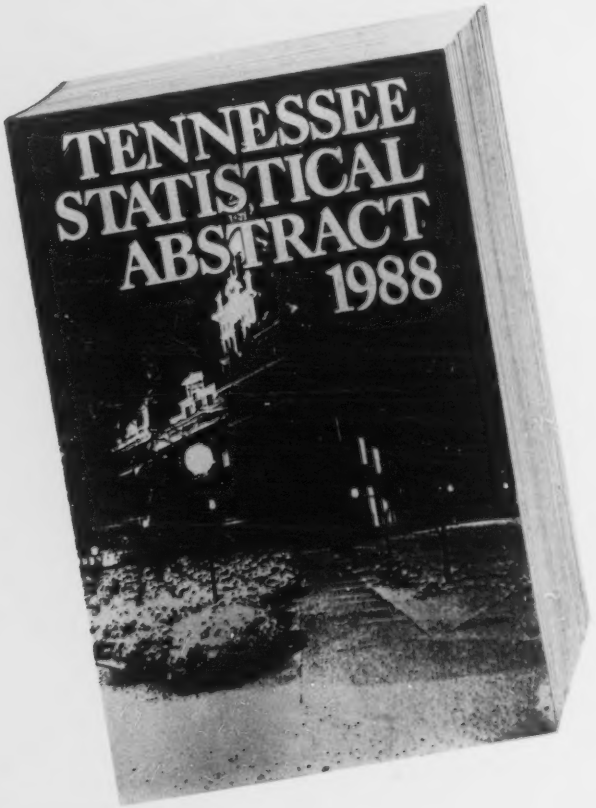
In Table 2 the impact is dominated by the payroll component of University expenditures. When compared to other University units, UTK has the smallest percent of the total impact attributable to payroll; nonetheless, for UTK, payroll contributes almost 93 percent of the total impact.

Based on total University-specific expenditures of $364 million, it is estimated that $360 million in income was generated for 1985-86. Additionally, nearly $53 million in income is estimated to have been generated from student and visitor expenditures. Thus, for 1985-86, not counting the many nonquantifiable effects, the total estimated dollar impact of the University's presence was $413 million.□



THE 1988 TENNESSEE STATISTICAL ABSTRACT IS YOUR SOURCE FOR INFORMATION

about everything you ever wanted to know about Tennessee and didn't know where to look!



More than 700 pages of economic and social data about Tennessee - including the most current historical information available for the state, MSAs, counties, cities, and towns.

Of special interest to planners and decisionmakers, the Tennessee Rankings section provides a means to compare Tennessee with other southeastern states and the nation in areas such as per capita income, population estimates, real estate and finances.

Available February 1988.

"If we were judging a contest for the best state Statistical Abstract, our vote would go to yours." Glenn W. King, Chief, Statistical Compendia Staff, Bureau of the Census, Nov. 1985

☐ Please send me _____ copy(ies) of the **1988 TENNESSEE STATISTICAL ABSTRACT** at the price of $27.95 plus $2.05 postage and handling per copy.

☐ Please reserve a STANDING ORDER for _____ copies. I understand that I will receive all future editions of the **TENNESSEE STATISTICAL ABSTRACT** until I elect to cancel my subscription.

Make checks payable to The University of Tennessee. ☐ Bill Me. ☐ Payment Enclosed.

SEND TO _____
NAME

_____
ADDRESS

_____
CITY STATE ZIP

_____
SIGNATURE OF AUTHORIZED PURCHASER

WINNER OF THE 1986 AWARD FROM THE ASSOCIATION FOR UNIVERSITY BUSINESS AND ECONOMIC RESEARCH FOR THE BEST CONTINUING PUBLICATION.

ABER

440
CONGRESSIONAL INFORMATION SERVICE
ATTN: SRI
4520 EAST-WEST HIGHWAY
BETHESDA MD 20814

The University of Tennessee
Fall 1987
Volume 23 Number 2

Survey of Business

Center for Business and Economic Research College of Business Administration The University of Tennessee, Knoxville

U8710-1
3/29/88

Winter 1988

Survey of Business

1988 ECONOMIC OUTLOOK

THE 19th ANNUAL ECONOMIC OUTLOOK AND BUSINESS ATTITUDE SURVEY

Panelists for the 1988 Survey of Business Attitudes

* **Norbert J. Ackermann, Jr.**, Pres., CONINCO, Inc., Knoxville
W. G. Adams, VP, Tennessee Eastman Co., Kingsport
Herbert G. Adcox, Pres., Herb Adcox Chevrolet, Chattanooga
♦ **James H. Alexander**, Exec. Dir., Insurors of Tennessee, Nashville
R. M. Alpert, Jr., President, Lifeguard, Inc., Nashville
* **Charles E. Ashworth**, General Manager, Continental Baking Co., Inc., Memphis
C. F. Bailey, Asst. Superintendant – of Operations, CSX Transportation, Erwin
Josh Barnes, President, Lexalite International Corp., Dickson
† **Alf T. Barnette**, Executive Vice President, West Tennessee Industrial Association, Jackson
Phillip Bass, Owner, Bass Manufacturing Co., Camden
* **Don W. Belcher**, Dir. of Research, Nashville Area Chamber of Commerce, Nashville
* **Charles Bell**, Mgr., Employee Relations, Allied Corp., Knoxville
* **Susan Bies**, Exe. VP/CFO, First Tennessee National Corp., Memphis
David W. Bird, Regional Sales Mgr., Peterbilt Motors, Madison
* **Edward C. Blank, II**, Atty., Trabue, Stardivant & DeWitt, Nashville
Aaron Blanton, Gen. Mgr, General Metal Products Co., Humboldt
† **John C. Bolinger, Jr.**, Vice Chairman, Piedmont Natural Gas, Co., Nashville
* **Stephen J. Boyer**, Pres., Tennessee Retail Federation, Nashville
C. Ron Brantner, State Statistician, USDA, Tennessee Agricultural Statistics Service, Nashville
James A. Breaux, Pres. & Gen. Mgr., Bowater Southern Paper Co., Calhoun
* **Berry Brooks**, Sr. VP, Sovran Bank/Central South, Nashville
† **C. Arnold Cameron**, Atty., Cameron and Cameron, Attorneys, Cookeville
♦ **John D. Canale**, Pres., D. Canale & Company, Memphis
♦ **Richard W. Cardin**, Managing Partner, Arthur Andersen & Co., Nashville
* **Ralph D. Carnathan**, Dir. of Indus. Development, TVA, Knoxville
† **William R. Carter**, President, Carter Ltd., Inc., Fayetteville
Alan Cates, Attorney at Law, Garner, Lewis, Cates, and Prickett, Chattanooga
† **William V. Chafin, Jr.**, Exec. Dir., Maury County Chamber of Commerce, Columbia
† **Jim Charlet**, Director, U.S. Dept. of Commerce, International Trade Admin., Nashville
† **Edmond D. Cicala**, Pres., Edmond Enterprises, Inc., Memphis
A. C. Clark, Commissioner, Tennessee Dept. of Agriculture, Nashville
J. D. Clinton, President, Independent Southern Bancshares, Brownsville
Sidney Coe, VP, Oper., McCord Winn Textron, Cookeville
* **David Coffey**, Pres., The Nucleus, Inc., Oak Ridge
Harry L. Cole, Plant Mgr., Oster, Div. of Sunbeam, McMinnville
* **Steve G. Conerly**, President, Pet Dairy, Johnson City
† **Charles W. Cook, Jr.**, Chairman and CEO, Third National Corporation, Nashville
† **James C. Cotham, III**, Prof., Massey Graduate School of Business at Belmont College, Nashville
† **Michael Craft**, Pres. & Pub., The Jackson Sun, Inc., Jackson
* **Thomas H. Davis**, C.P.A., Internal Auditor, Tennessee Farmers' Co-Op, LaVergne

♦ **Charles H. Dean, Jr.**, Chairman of the Board, TVA, Knoxville
* **Sami R. Dietrich**, Exec. Dir., Dyer County Area Chamber of Commerce, Dyersburg
Walter L. Dodson, V.P. and Gen. Mgr., Custom Urethane Products Co., Parsons
Gerald J. Doyle, VP, The MAXIMA Corp., Oak Ridge
C. E. Dunham, Plant Manager, Quaker Oats Co., Jackson
* **John W. Edwards, Jr.**, Pres., Riley Hardware Co., Inc., Clarksville
* **Arthur R. Eggert**, Dir. of Manuf. Operations, Bridgestone Tire Mfg., LaVergne
* **Paul M. Engelmann**, Exec. Dir., United Way of Greater Chattanooga, Chattanooga
† **Joseph R. Exum**, Chair., Leland-Powell Fasteners, Inc., Martin
Donald F. Fenton, President, Taylor Implement Division, Athens
R. Jack Fishman, Pub. and Editor, Citizen Tribune, Morristown
* **W. K. Ford**, Pres., Ford Construction Company, Dyersburg
† **William A. Fortune**, Chairman of the Board, FMP Development Corporation, Knoxville
Doug Fox, Dir. of Mktg., AFG Industries, Inc., Kingsport
Jerry B. Fussell, President, JBF Associates, Inc., Knoxville
Donald M Gallagher, VP, Kusan Inc., Development, Brentwood
Jimmie Gaunce, Bus. Rep., International Assoc. of Machinists and Aerospace Workers, Manchester
Claude T. Gentry, Pres., Genco Stamping & Mfg. Co., Cookeville
* **John F. Germ**, Pres. and CEO, Campbell & Associates, Inc., Chattanooga
Em J. Ghianni, Chairman of the Board, Comfortzone Corp., Nashville
† **Thomas A. Griffin, Jr.**, President, Mid-South Title Insurance Corp., Memphis
* **Darwin R. Griva**, VP & Gen. Mgr., Emerson Electric Co., Chromalox Div., Murfreesboro
* **Joe R. Grooms**, Controller, Martin Marietta Ordnance Systems, Inc., Milan
G. Lynn Guthrie, VP, CFW Construction Co., Inc., Fayetteville
Louie W. Hailey, Jr., President, Townsend Supply Co., Jackson
John D. Haltom, Dir. of Distn., United Foods, Inc., Bells
♦ **F.W. Hamilton**, President, Industrial Development and Warehousing, Inc., Jackson
R. P. Harkins, Sr. Financial Analyst, E.I. du Pont de Nemours and Co., Memphis
Robert Harrison, CEO, The Troxel Mfg. Co., Inc., Moscow
Thomas W. Hart, President, Hart's Mfg. Co., Collierville
† **Fred Harvey, Jr.**, Pres., Harveys Department Store, Nashville
Tom Hendrix, President, Henco Inc., Selmer
† **Waymon L. Hickman**, Pres., First Farmers and Merchants National Bank, Columbia
James L. E. Hill, Plant Mgr., E.I. du Pont de Nemours & Co., Chattanooga
Ralph E. Hillard, President, Teledyne W-F Industries, Dyer
Robert J. Hively, Pres./Gen. Mgr. and CEO, Knoxville News-Sentinel Co., Knoxville
K. D. Holder, Plant Manager, Trenton Mills, Inc., Trenton
* **James F. Holt, Jr.**, Pres., The Holt-Southeast Corp., Nashville
Carter K. Hooks, Executive Director, Obion County Chamber of Commerce, Union City
* **Horace Howell**, VP, Colonial Baking Company, Nashville
* **Robert L. Huffman**, Industrial Relations Manager, Procter & Gamble Co., Jackson

George Hyfantis, Jr., Pres., Advanced Waste Management Systems, Inc., Sevierville
Richard W. Ince, Pres. & CEO, Elk River Resources, Inc., Knoxville
Anita Gail James, VP, Probat Sales & Engineering Inc., Memphis
* **Pat J. Jansen**, Sr. VP of Finance, Allen & O'Hara, Inc., Memphis
Carl Johnson, Commissioner, Tennessee Department of Economic and Community Development, Nashville
* **J. L. Johnson**, VP, South Central Bell Telephone Co., Nashville
* **Glenn W. Jones**, Partner, Research Department, J. C. Bradford Co., Nashville
Thomas M. Kesterson, Pres., Kesterson Food Company, Inc., Paris
† **Wendell C. Kirk**, Pres., Heritage Federal Savings and Loan Association, Kingsport
* **R. D. Klasen**, Plant Manager, Ford Motor Co., Nashville Glass Plant, Nashville
Thomas H. Klindt, Asst. Dean, The University of Tennessee, TN Agricultural Experiment Station, Knoxville
† **Gene C. Koonce**, Pres. & CEO, United Cities Gas Co., Brentwood
Sid Kraker, Pres., Pathmark Transportation Marketing Co., Inc., Memphis
† **James W. Lail**, Pres., Raines Brothers, Inc., Chattanooga
Joe E. Lancaster, CEO, Tennessee Farmers Mutual Insurance Co., Columbia
Charles B. Landguth, VP Admin., Martin Marietta Energy Systems Inc., Oak Ridge
♦ **Carl H. Langschmidt, Jr.**, Atty., Boone, Wellford, Clark, Langschmidt & Apperson, Memphis
♦ **E. H. Lannom**, Chairman of the Board, Forcum-Lannom Associates, Inc., Dyersburg
Sandy Leonard, Exec. Director, Clairborne Co. Chamber of Commerce, Tazewell
* **W. Carroll Leonard**, Plant Mgr., Raytheon Company, Bristol
* **Eldon Leslie**, Exec. VP, Cookeville-Putman County Chamber of Commerce, Cookeville
Gerald F. Lewis, Pres., United Way of Middle Tennessee, Nashville
♦ **Herbert W. Lindahl, Jr.**, Pres., State Industries, Inc., Ashland City
Lake F. Loudermilk, Pres., Intl. Union of Electricians, Local 748, Jefferson City
♦ **Howard W. Loveless**, Pres., HAAS INC., Memphis
♦ **Thomas A. Lupton, Jr.**, Pres., Stone Fort Land Co., Chattanooga
David Manning, Commissioner, Tennessee Department of Finance and Administration, Nashville
Fran Marcum, Chairman of the Board, Micro Craft, Inc., Tullahoma
* **Leo J. Matthews**, Pres. & Gen. Mgr., Pay Cash Grocery Co., Inc., Knoxville
Forrest May, Jr., Pres., ADMARK Systems, Inc., Memphis
† **John E. McCutchen**, President, E. L. Morgan Company, Jackson
M. (Mac) McDonnell, VP, Industrial Systems Division, Texas Instruments, Johnson City
Mark McLaughlin, Mgr. of Public Relations, Bridgestone (U.S.A.), Inc. Tire Manufacturing Group, LaVergne
Robert P. McLean, Senior Vice President, Avcoor, Inc., Vonore
James Mecredy, Pres., Market Development Assoc., Memphis
Mark A. Medley, Pres., Control Technology, Inc., Knoxville
William P. Melley, Pres., France Manufacturing, Fairview

♦ **Merle C. Meyers**, Exec. VP & CEO, Middle Tennessee Natural Gas Utility, Smithville
Bruce Minkoff, President, Fraenkel Bedding, Memphis
Ned K. Momany, President, Harbour, Inc., Dickson
* **Everett Moody**, Plant Manager, Holley Carburetor Division, Colt Industries, Paris
Bill Mullican, Jr., VP, TODCO-Wood Products, Alcoa
Archie Nash, President, Overton Produce Company, Nashville
* **Hugh G. Neil, Jr.**, President, SPINLAB, Knoxville
Ralph E. Newman, Jr., Chairman of the Board, The Bankers' Life Insurance Co., Knoxville
Robert E. Oldham, Senior Vice President, Finance, Red Food Stores, Inc., Chattanooga
* **John L. Parish**, Pres., Lannom Mfg. Co., Inc., Tullahoma
Roland Pattyn, Pres., American Magotteaux Corp., Nashville
Caron Petersen, Asst. Prof., Tennessee State Univ. Center for Labor Mgt.. Relations,Nashville
* **Ivan Pihl**, General Manager, Reelfoot Meats, Union City
♦ **Richard A. Piske**, Manager, Allen & Hoshall, Inc., Knoxville
* **Herman Postma**, Vice President, Martin Marietta Energy Systems, Oak Ridge
* **Patricia D. Postma**, Pres., Business Investment Services, Oak Ridge
Ted Presson, President, P and H Machine Works, Jackson
Cooper Prude, VP, Employee Relations, N.A.P. Consumer Electronics Corp., Knoxville
* **Allan G. Pulsipher**, Chief Economist, TVA, Knoxville
Earl M Quinley, President, Tri-County Federal Savings & Loan Association, Covington
♦ **James B. Ragland**, Chairman, C. B. Ragland Company, Nashville
† **Richard E. Ray**, Mgr., Tennessee Operations, Aluminum Company of America, Alcoa
† **Arthur J. Rebrovick, Jr.**, VP, SSMC, Inc., Murfreesboro
Harry T. Robinson, Jr., Chairman, Atlas Paper Box Co., Chattanooga
Milton Rodgers, General Manager, Mid-South Fair/ Libertyland, Inc., Memphis
* **Robert A. Rogers**, VP-Admin., Plumley Rubber Co., Paris
Charles R. Ross, Vice President, Finance, Hartmann Luggage Co., Lebanon
Ichiro Sahara, Pres., Tabuchi Electric Co. of America, Jackson
John R. Salzer, Plant Controller, Rohm & Haas Tennessee Incorporated, Knoxville
William B. Sansom, Chairman of the Board, The H.T. Hackney Co., Knoxville
Camden B. Scearce, VP, Secretary-Controller, The Krystal Co., Chattanooga
Raymond Schultz, Pres, Hampton Inns Hotels, Memphis
* **David E. Sharp**, President, Home Federal Savings Bank of Tennessee, Knoxville
♦ **James L. Simmons**, Pres. & Chairman of the Board, Tri-City Bank & Trust Co., Blountville
Reuben M. Smith, Pres., Reuben M. Smith Advertising, Nashville
Reese L. Smith, III, Pres., Haury & Smith Contractors, Nashville
M. Lee Smith, Pub., M. Lee Smith Publishers & Printers, Nashville
* **Gary K. Smith**, Pres., American Uniform Co., Cleveland
Edward H. Smoot, Sr. Consultant for Government Affairs, National Bank of Commerce, Memphis
* **Andrew J. Spurgeon**, Sr. Resident Vice President, Merrill, Lynch, Pierce, Fenner & Smith, Inc., Nashville

* **Herbert St. Gour**, President & CEO, Dixie Saving Stores, Inc., Chattanooga
* **Carl M. Stanley**, President, Burroughs-Ross-Colville Co., McMinnville
Frederick T. Steel, Plant Manager, Goodyear Tire & Rubber Co., Union City
* **J. Gilbert Stein**, Chairman of the Board, Stein Construction Company, Chattanooga
William B. Stokely, III, Chairman and President, The Stokely Co., Knoxville
Lonnie J. Stout, Pres., Winners Corporation, Brentwood
* **Thomas E. Sudman**, President, Digital A. V., Knoxville
Danny Swafford, President, M.K.D., Inc., Emville
† **William H. Swain**, President and Chairman of the Board, First National Bank, Oneida
* **Larry E. Swanson**, VP, Commercial Mfg., Carrier Air Conditioning Co., McMinnville
Ray U. Tanner, Chairman & CEO, Jackson Natl. Bank, Jackson
* **James W. Terry**, Exec. VP, Union Planters Natl. Bank, Jackson
♦ **W. Neil Thomas, Jr.**, President, Thomas, Mann & Smith, P.C., Chattanooga
† **J. R. Thompson**, VP-Finance, TPI Corporation, Johnson City
* **Douglas P. Thurley**, Plant Mgr., TRW Steering Components, Group Ross Gear Div., Lebanon
R. H. Traeger, Vice President and General Manager, Toshiba America, Inc., Lebanon
Rayburn Traughber, Commissioner, Tennessee Department of Employment Security, Nashville
* **Earl H. Triplett**, Consultant, First American Bank, Memphis
Thomas M. Tucker, Dir., Power Equipment Co., Knoxville
* **Richard E. Tumblin, CLU**, Chartered Financial Consultant, Tumblin-Gannaway Associates, Knoxville
† **John M. Upchurch**, Appraiser and Land Surveyor, Buchanan
♦ **Lawrence W. Whalen, Jr.**, Business Director and Consultant, American Mutual Insurance Co., Morristown
Richard S. White, Vice President of Programs, Agricenter International, Memphis
* **Jack D. Whitfield**, President, Sverdrup Technology, Inc., Tullahoma
Jimmie D. Williams, Chief Financial Officer, Beltz Investment Co., Inc., Memphis
James Willits, Plant Mgr., Central Soya Co., Inc., Chattanooga
Carter H. Witt, Pres., Tennessee Assoc. of Business, Nashville
Albert Wofford, Tennessee Group Controller, Seigel Robert, Inc., Ripley
† **W. Lewis Wood, Jr.**, Sr. VP, Allen & Hoshall, Inc., Memphis
Harold G. Woods, President, Knoxville-Oak Ridge Area, Central Labor Council, AFL-CIO, Knoxville
* **Thomas L. Yount**, Consultant, Nashville
† **Allen Zang**, Pres., Nashville Bridge Company, Nashville

♦ These panelists have served 19 years.
♦ These panelists have served 15 or more years.
† These panelists have served 10 more years.
* These panelists have served 5 more years.

C O N T E N T S

Comments *by David A. Hake*	**2**	*David A. Hake is director of the Center for Business and Economic Research and Editor, Survey of Business*
Outlook of Tennessee Business Leaders for the U.S. and Tennessee Economies *by Betty B. Vickers*	**3**	*Betty Vickers, Research Associate at CBER, UTK, is project director of the State Data Center and editor of the Tennessee Statistical Abstract.*
State of the State	**12**	*Panelists' comments on present and future events in the Tennessee economy.*
The U.S. Economic Outlook *by John W. Mayo*	**14**	*John W. Mayo is a Research Assistant Professor, CBER, and Assistant Professor of Economics, UTK. His areas of specialization are industrial organization and applied microeconomics.*
1929 and 1987: Is a Repetition of the Great Depression Likely? *by Anne Mayhew*	**21**	*Anne Mayhew is Professor of Economics and Chairperson of the Economics Department, UTK. She specializes in American economic history.*
Outlook for the Tennessee Economy *by David M. Mandy and Matthew N. Murray, with the Agricultural Sector by Burton English*	**27**	*David M. Mandy is a Research Assistant Professor, CBER, and Assistant Professor of Economics, UTK. His fields of specialization are economic theory and econometrics.* *Matthew N. Murray is a Research Assistant Professor, CBER, and Assistant Professor of Economics, UTK. He is interested in policy as it relates to public finance and health and labor economics.* *Burton English is an Associate Professor of Agricultural Economics and Rural Sociology.*

Survey of Business

C. Warren Neel, Dean
College of Business Administration

CBER APPOINTMENTS

David A. Hake, *Director and Editor,* **Survey of Business**
William F. Fox, *Associate Director and Research Associate Professor*
John W. Mayo, *Research Assistant Professor*
David M. Mandy, *Research Assistant Professor*
Matthew N. Murray, *Research Assistant Professor*
Lynell Aycock, *Clerk-typist*
Susan E. Bott, *Research Assistant*
Pamela L. Bridgman, *Research Asst.*
Maxwell J. Cornelius, *Manager, Computer Resources Group*
Deborah W. Crowder, *Office Supervisor, Computer Resources*
Victoria Cunningham, *Research Asst.*
Penelope M. Gilmore, *Research Assoc.*
Marcia Griswold, *Research Assistant*
Donna Kemper, *Senior Secretary*
Jean Knuckles, *Assistant to the Director*
Carol E. Lammers, *Research Associate*
Jennifer F. Langston, *Senior Secretary*
Carla Newton, *Secretary*
Patricia A. Price, *Sr. Research Associate*
Betty B. Vickers, *Research Associate*
Melissa Wood, *Research Assistant*

Graduate Research Assistants
Tim Essenburg
Joseph Flynn
Maria Teresa Hocson
Janet Knoedler
John Majors

Consultants
Kenneth E. Quindry, *Professor Emeritus*

Art Director
Richard J. LeFevre, *Associate Professor of Art*
Donna S. Hundley, *Technical Art*

PUBLICATIONS GROUP

Jeanne P. McDonald, *Managing Editor*
Joan S. Carr, *Research Assistant*
Lynn J. Landry, *Publications Coordinator*
Patricia A. Hunley, *Word Processing Group Supervisor*
Julia C. Elkins, *Word Processing Specialist*
Patricia D. Flynn, *Word Processing Specialist*

COMMENT

Three executives, Mr. James H. Alexander, Executive Director, Insurors of Tennessee; Mr. Richard W. Cardin, Managing Partner, Arthur Anderson & Co., Nashville; and Mr. James L. Simmons, President and Chairman, Tri-City Bank and Trust Company, have given their most valued possession--their time, for each of the nineteen years we have surveyed business attitudes in Tennessee. I salute them and thank them for exceptional dedication to the welfare of our state and its citizens. No lesser motivation explains their willingness to juggle priorities each year in order to participate in the annual Economic Outlook Panel.

This year they are joined by 187 other public service-minded executives from business, government, industry and education across Tennessee in an assessment of the condition of the economy of the state and the nation. A statistical and pictorial summary of their attitudes leads off this 1988 Outlook issue. **State of the State,** on pages 12 and 13, features representative quotes from the 1988 Outlook Panel organized by grand division.

Next, CBER economist John Mayo examines the national economy and its near-term prospects, followed by an invited article by economic historian Anne Mayhew, who addresses the question, **1929 & 1987: Is a Repetition of the Great Depression Likely?** While the simple answer will surprise few readers, the path to the conclusion is most informative.

The concluding article presents a comprehensive and consistent forecast for Tennessee based upon the Tennessee Econometric Model. Modelling project director Dave Mandy is joined in the analysis by CBER economist colleague Matt Murray. The special analysis of the agriculture sector was contributed by Burton English of UTK's Agriculture Economics Department.

We hope this issue, which combines the best thinking of our Outlook Panel of Tennessee executives and the professional evaluation of UT economists, is an aid to better understanding of, and improved decisionmaking in our complex state and national environment.

David A. Hake
Director, CBER

SURVEY OF BUSINESS, The University of Tennessee, Knoxville (ISSN 0099-0973), is published quarterly by the College of Business Administration, Center for Business and Economic Research, The University of Tennessee, Knoxville to inform the Tennessee business professional about current economic and socio-economic trends and techniques developing in the state. Authorization No. EOI-1490-002-87. Back issues and article reprints may be ordered at $1.25 per copy. Address correspondence to Editor, Center for Business and Economic Research, Suite 100, Glocker Hall, The University of Tennessee, Knoxville, Knoxville, Tennessee, 37996-4170. Second class postage paid at Knoxville and Nashville, Tennessee. Requests for inclusion on mailing list and address corrections should be sent to the same address. The publisher of the Survey assumes no responsibility for statements made by writers. Articles reflect the opinions of the authors. Postmaster: Send Change of Address form 3579 to: Center for Business and Economic Research, The University of Tennessee, Knoxville, Knoxville, Tennessee, 37996-4170.

OUTLOOK OF TENNESSEE BUSINESS LEADERS FOR THE U.S. AND TENNESSEE ECONOMIES

by Betty B. Vickers

As Tennessee business leaders share their views on the state and national economies for 1988, they repeatedly cite successes in business location and expansion as the driving force behind their optimistic expectations for Tennessee.

These respondents to the nineteenth annual Business Attitudes Survey also express concerns for the state economy that should be addressed by education and tax reforms. At the national level, the primary issue is the federal budget deficit and its effect on interest rates.

Despite forecasts of slow growth for the U.S. economy, Tennessee business leaders cite success in business location and expansion as reasons for being optimistic about the state outlook.

Figure 1 on page 6 shows panel expectations for both the state and national economies for 1988 compared to 1987. Clearly, Tennessee business leaders are more optimistic in their outlook for the state in 1988 than for the U.S. economy. Nearly half of the Outlook panelists feel that the state's economy will improve in 1988, while approximately the same percentage expects a decline in the U.S. economy. In each case, approximately one-fourth of the panelists expect no change.

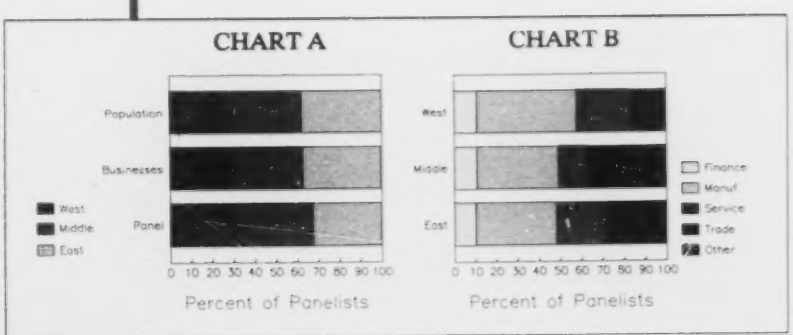
Betty B. Vickers

DEMOGRAPHIC PROFILE OF THE 1988 ECONOMIC OUTLOOK PANEL

The 1988 Economic Outlook Panel is made up of 190 business leaders from across Tennessee who responded to the nineteenth annual Business Attitudes Survey in October 1987. The majority of these executives responded to the survey before the stock market crash; however, 28 percent of the responses were received after October 19, 1987. A total of 178 responses are included in data tabulation and analysis. Another 12 responses were received after tabulations were complete; but comments from all respondents provided valuable direction for this article.

The tabulation of data by geographic location includes 55 responses from business leaders in West, 65 from Middle, and 58 from East Tennessee. Chart A describes the geographic distribution of the Outlook Panel as well as the geographic distribution of the population and number of business establishments in Tennessee. The data sources for the latter are *Current Population Reports* and *County Business Patterns*, both published by the U.S. Department of Commerce, Bureau of the Census. The Outlook '88 Panel appears to be weighted a little heavily for West Tennessee executives at the expense of East Tennessee. The number of panelists from Middle Tennessee are representative of the population and business concentrations for that region of the state.

Data are also tabulated according to five industry group designations. Responses to the Outlook '88 survey include 73 manufacturers, 37 service sector panelists (including chambers of commerce, United Way agencies, consulting firms, accountants, architects, and attorneys), 17 trade sector panelists (including wholesale and retail), and a fifth category designated "other," which includes 32 business leaders from construction, labor, education and government.

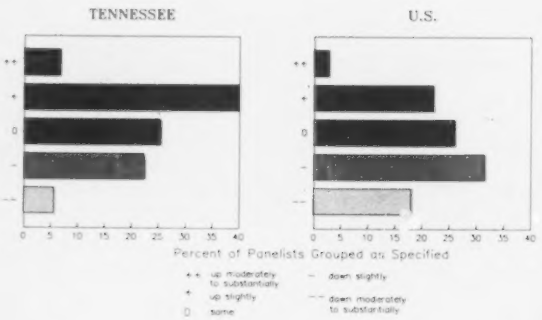


Additional insight into the regional opinions is provided by Chart B, which depicts the industry group composition of each geographic sector. West Tennessee, for example, continues to have heavier representation by manufacturers and service sector panelists than the other regions. These two business sectors generated the most optimistic expectations for the state economy for 1988. Likewise, West Tennessee panelists were more optimistic than the other geographic regions--West Tennessee opinions were dominated by the responses of manufacturing and service sector panelists.

Betty B. Vickers

Panel optimism for the state economy is led by the manufacturing and service sectors, where expectations for an increase are expressed by 53 and 48 percent, respectively. An additional 25 percent or more of the panelists in these two groups expect the state economy to be as strong in 1988 as in 1987. On the other hand, 53 percent of the finance sector panelists expect a downturn in the state economy in 1988.

1. Panelists expect a slight downturn in the U.S. economy, but think the state should be better in 1988 compared to 1987.



The following comment from an insurance executive from Middle Tennessee is representative of the Outlook '88 panel view:

I believe the outlook for Tennessee is good -- better than the U.S. Many of our recent plant locations should be operational in 1988. Our main assets continue to be location, recreational opportunities, good people, and good state government. We must enact a state income tax with a reduction in our high sales tax. Our local governments and state government need more money for education, prison reform and Medicaid.

While Tennessee historically lags the nation in business cycle swings, this trend may not necessarily prevail, according to another panelist from Middle Tennessee:

We can and should enjoy economic growth even after a U.S. turndown if we pursue the policies and goals of making Tennessee a more attractive state for business. We should improve education, and make business taxes broad-based and indifferent to whether business is labor-, capital-, or intellectually-intensive.

A manufacturer from West Tennessee adds:

There is a willingness on the part of state and local governments as well as private citizens to prepare their communities for the role of attracting industry. There is quite a lot of sophistication and valuable experience which go into these efforts, and we are reaping the benefits with plant locations being nailed down across our state. Of course the "preparation" for attracting industry involves wholesale improvements which enhance the climate for all types of business. The competition is terrific; but it is making our state a better place to live.

An East Tennessee utility executive warns that there are still problem areas that need concentrated attention:

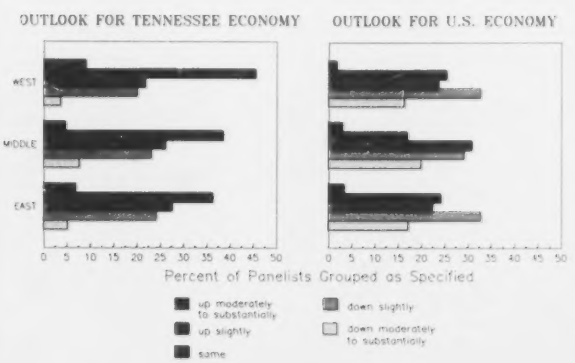
Overall economic growth in the state is as good as one can expect, given the tepid national economy. It is concentrated, however, in metropolitan and suburban areas. The divergence between the poor and rich is widening, and migration from rural areas is beginning to accelerate.

OUTLOOK BY GEOGRAPHIC LOCATION

Expectations according to panelists' geographic location are shown in Figure 2. Little variation is evident between regions regarding expectations for either state or national economies. West Tennessee executives are slightly more optimistic for the state, with 54 percent looking for slight to moderate improvements. From Middle and East Tennessee 43 percent expect similar change. When opinions of "no change" are added to expectations for improvement, 76 percent of the panelists from West Tennessee lead the majority opinion that the state economy will be the same or better in 1988 compared to 1987 while 71 percent from East Tennessee and 69 percent from Middle Tennessee share this expectation.

There are even fewer differences in regional expectations for the U.S. economy. Approximately half the panelists from each region look for the national economy to be the same or better in 1988 compared to 1987. Conversely, the other half expect a downturn in the national economy.

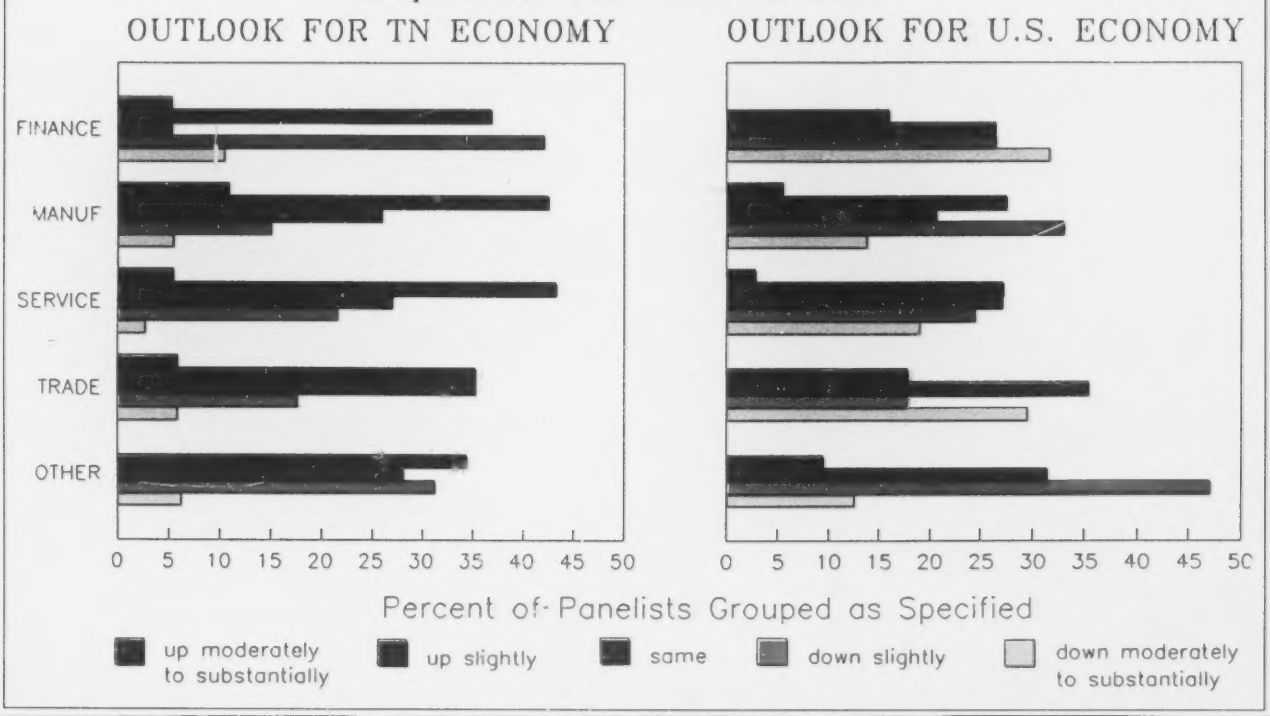
2. Panelists' expectations vary little by geographic sector.



OUTLOOK BY INDUSTRY GROUP

Outlook panelists are further identified as belonging to one of five industry groups. Data are then tabulated by industry group in order to determine how the total panel view might be influenced by panelists from any particular business sector. Figure 3 shows panel outlook for the state and U.S. by industry group.

3. Manufacturing and service sector panelists are optimistic in their expectations for the state and national economies.



Panel optimism for the state economy is led by the manufacturing and service sectors, where expectations for an increase are expressed by 53 and 48 percent, respectively. An additional 25 percent or more of the panelists in these two groups expect the state economy to be as strong in 1988 as in 1987. On the other hand, 53 percent of the finance sector panelists expect a downturn in the state economy in 1988. This negative expectation is softened somewhat by the lack of consensus among finance panelists regarding the expected performance of the state economy. While 53 percent look for a decline in the economy, another 42 percent expect an increase, and 5 percent believe there will be no change.

Finance panelists agree, however, that the national economy will be the same or down in 1988 compared to 1987. Fifty-seven percent expect a decline, and another 26 percent feel there will be no change. An even larger percentage of the panelists from the industry group designated as "other" concur with these finance panelists in their expectations for a downturn. Panelists expectations reported in the "other" industry group opinion include executives from construction, labor, education, and government. Nearly 60 percent of the "Other" sector panelists look for a downturn in the U.S. economy in 1988 compared to 1987.

Service, manufacturing, and trade sectors have more positive expectations for the national economy. More than half the panelists from each of these industry groups believe that the U.S. economy could be the same or better in the year ahead. However, differences of opinion are apparent among manufacturing and trade panelists as seen in the bimodal responses of these industry groups.

IMPORTANT ECONOMIC ISSUES FOR 1988

In addition to sharing their views on the general health of the state and national economies, respondents to the 1988 Business Attitudes Survey reviewed and evaluated 19 areas of potential economic concern in the Tennessee economy. They compared their expectations for 1988 with their evaluations of each area for 1987. Each Outlook panelist then identified and ranked five issues he (she) perceived as key problems facing Tennessee in 1988. Figure 4 shows panel expectations for those issues deemed most critical by panel consensus.

*1. Interest Rates On Loans (score = 217)**

Interest rates on loans, viewed as the most critical issue for 1988, has been ranked among the top three issues for several years except for 1987. Expectations for rising interest rates in 1988 (following three years of continuous decline) may be part of the reason that this issue is now chief among panelists' concerns. Eighty-four percent of the Outlook '88 panelists feel that interest rates will be higher in 1988; 44 percent think this increase will be moderate to substantial; and only 6 percent perceive a decline in rates relative to 1987.

Comments from a service sector panelist from West Tennessee and a Middle Tennessee manufacturer summarize the key point noted by most panelists:

The issue of interest rates was selected as most critical because they are so much influenced at the national level and

* The "score" shown after each issue is the weighted response of all panelists considering the list of potential economic problems. It is included to indicate the relative importance of the issues.

The level of unemployment through July of 1987 was 7.3 percent, compared to an average of 8.5 percent for the same seven-month period in 1986. Moreover, 75 percent of the Outlook '88 panelists expect the unemployment rate to remain the same or decline even more in the year ahead. Clues to why these panelists rank unemployment as the fourth most critical issue are found in panelists' comments.

there is so little that can be done at the state level. The key is financial responsibility, which Congress refuses to take.

It appears interest rates are on the increase as we near the beginning of 1988. Furthermore, recent history has shown that the Tennessee economy is very interest-rate sensitive. Unfortunately we have very little local control over this problem. It must be addressed on the national level.

Manufacturing and service sector panelists from East Tennessee expand on these comments:

Increasing interest rates will be the cause of most other economic problems. The only way to solve the problem is to curb spending by the Federal government.

The projected increase in interest rates will continue the decline in housing starts and automobile sales. These facts, combined with expectations of higher consumer prices, will place a significant strain on continued economic expansion. Our company anticipates a recession beginning in the first quarter of 1989.

Several panelists offer encouragement for this issue even though they too believe interest rates to be the most critical issue for 1988. First, a finance sector panelist from Middle Tennessee states:

Interest rates on loans will be higher, yet money will be more readily available in Tennessee. Rates are a national market- dictated phenomena, whereas Tennessee's banking laws and business climate dictate availability as much as interest rates do. Our business climate is favorable and should offset the higher price of credit affecting availability.

Secondly, a West Tennessee manufacturer closes this comment with a tough but positive statement:

Interest rate will have a cooling effect on our economy for 1988 not only in cost, but in our positive outlook. Raising interest rates will cancel many projects across the state. Higher rates are the necessary price we pay for controlling inflation, and I think they are worth the price !

2. Scarcity Of Skilled Workers (score = 191)

The scarcity of skilled workers is a function of the skill level of the workforce relative to industry demand. While panelists perceive that much effort is being expended on training the workforce, they feel that equal or greater effort in industrial recruitment is resulting in the attraction of business to Tennessee, which in turn puts increased pressure on the supply of skilled labor.

This Outlook panel, like several earlier panels, is divided in their expectations for this issue. Twenty-eight percent of the panel feels that the supply of skilled workers will be up in 1988 relative to 1987, while 32 percent expect a decline. Critical concern for this issue is also expressed by the 40 percent who foresee no change in the supply of skilled labor. In other words, nearly three-fourths of the panel expects skilled labor supply problems to remain critical or worsen in 1988.

A manufacturing executive form Middle Tennessee articulates the problem as follows:

As industry expands in Tennessee, the state must be in a position to supply the resources to sustain this growth. One of the more important resources is people, and the state MUST step up its efforts to improve the education and training system for both our young people and adults.

A service sector panelist from West Tennessee emphasizes the importance of vocational training:

Much emphasis has been placed on industrial recruitment statewide without sufficient planning on how we will fund training. Vocational education in the high schools can no longer be ignored or perceived as "second class." We must all work to remove the stigma so often associated with Vo-tech kids. Our educators must be educated as to what is taking place and be receptive to the technological needs of today and adequate funding must be provided for basic skills training and additional counselors. Our community colleges need more revenue to respond, as well as our vo-tech schools. Without a properly funded educational system we cannot keep pace with the need for skilled workers.

An East Tennessee Manufacturer describes the problem of skilled labor scarcity as one that affects high- and low-tech industries:

By picking scarcity of skilled workers as the number one problem, I am not specifically addressing those groups of skilled workers (electricians, welders, computer operators) as being the item that is truly scarce. As we continue to modernize existing facilities and build new plants, I find the real scarcity is finding individuals capable of being trained to work with sophisticated new equipment. In our industry, which is woodworking, we find that you can no longer hire the average man off the street or the average high school graduate and easily train him to understand how a planing or ripping machine operates. He cannot deal with the new technology.

As we become more competitive in the national and world markets, we have to address the new manufacturing technologies or the processes of our industries. I believe the capital is available to bring these new technologies into the state, and I believe the management is available to run the companies. But I do not believe that the work force is there, or is

being prepared, to utilize these resources. To find adequate personnel, we must screen ten or more applicants to find one that we feel has potential; then, we must do extensive in-house training to bring that individual up to speed. This , of course, is a costly procedure, not only from wastage in the manufacturing process, but in the additional burden of overhead to the company.

Although Tennessee is taking the lead in improving education, it is not addressing the vocational needs of the vast majority of students. In order to attract new industry to our state and to provide the skilled worker supply to existing industry for continued expansion, we must address the needs of training our children not only for college, but for a high-tech work environment.

3. Total Business Costs Increasing Faster Than Revenues (122)

More than 85 percent of the panelists expect business costs relative to revenue to rise in '88, compared to '87. An overwhelming majority (70 percent) feel this ratio will rise slightly and another 15 percent expect moderate to substantial increases. Panelists cite foreign competition as well as labor and interest costs as the impetus for this increase. Manufacturers are more concerned about this issue than any other industry groups represented on this Outlook panel. Not only do they give this issue the highest score, but they also rank it third in importance following scarcity of skilled workers and interest rates. A manufacturer from Middle Tennessee listed this as the most critical issue:

Inflation, higher interest costs, and low growth are going to squeeze profit margins.

Another mid-state panelist adds:

Increases in labor costs and interest expenses will be difficult to pass on to customers.

More important to a manufacturer from West Tennessee is the additional impact of foreign competition:

Costs are increasing faster than our competition, which is off-shore. We are no longer competitive. Insurance, steel, plastics, corrugated and other purchased parts have increased faster than selling price increases.

Issues ranked fourth through eighth by the Outlook '88 panel are viewed with nearly equal concern. Each of these issues is considered to be among the five most critical issues by slightly less than a third of the panelists, compared to 40, 50 and 60 percent for the top three issues. Table 1 shows the percentage of panelists ranking each issue and the weighted average score. "Cost or energy" and "demands for wage rate increases" are considered by more panelists than are "unemployment" and "supply of capital investment funds;" however, the latter issues are ranked higher by panelists and receive higher weighted average scores.

4. Level of Unemployment (score = 96)

The level of unemployment through July of 1987 was 7.3 percent, compared to an average of 8.5 percent for the same seven-month period in 1986. Moreover, 75 percent of the Outlook '88 panelists expect the unemployment rate to remain the same or decline even more in the year ahead. Clues to why these panelists rank unemployment as the fourth most critical issue are found in panelists' comments.

TABLE 1
Potential Economic Problems Ranked by Importance to Tennessee in 1988

Rank	Issue	Percent of panel selecting issue	Score
1.	Interest rates on loans	60	216
2.	Scarcity of skilled workers	54	191
3.	Total costs increasing faster than revenues received	39	122
4.	Unemployment	28	96
5.	Supply of Capital Investment Funds	29	88
6.	Cost of energy	33	83
7.	Demands for wage rate increases	32	81
8.	Labor-management cooperation	27	72
9.	Level of new residential construction activity	24	65
10.	Ability to attract and keep competent managerial personnel	20	61
11.	Level of commercial-industrial construction activity	19	52
12.	Excessive state and local taxes as a percentage of personal income	17	48
13.	Business-state government cooperation	15	43
14.	Underutilization of plant capacity	16	42
15.	Inadequate consumer demand	18	41
16.	Supply of transportation services and logistics support	11	35
17.	Consumer price level	15	28
18.	Supply of short-term working capital funds	12	28
19.	Availability of energy	1	4

**Each panelist selected five issues.*

A business leader from Middle Tennessee feels that the reported rate is inaccurate:

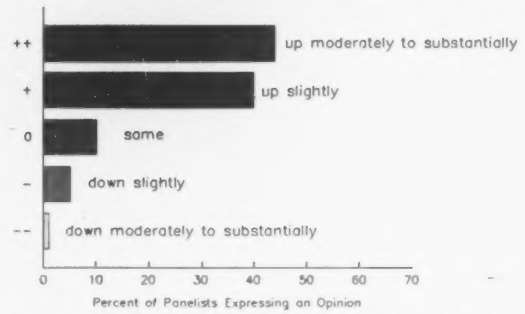
The unemployment rate in this country and Tennessee are terribly understated, because enormous numbers of workers are no longer counted in the workforce. We need to devise a more accurate method of counting the unemployed.

A service sector panelist from West Tennessee and a finance panelist from East Tennessee note that there are significant differences in unemployment rates across the state:

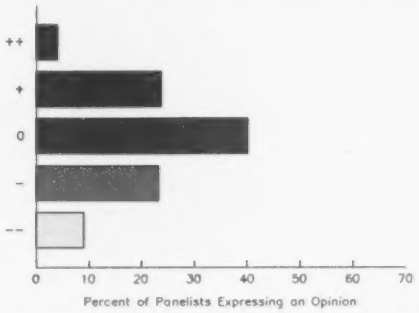
In September Governor Ned McWherter announced that 40 of our 95 Tennessee counties were designated economically depressed. One of the primary indicators in this designation was high unemployment rates. The overall effect on all business and services is tremendous.

4. Critical economic concerns in Tennessee: ranking and expected performance in 1988 compared to 1987.

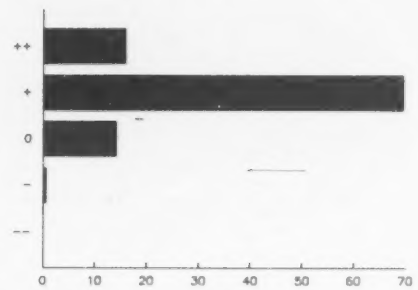
1. Panelists overwhelmingly anticipate interest rate to rise and identify this as the most critical issue of 1988.



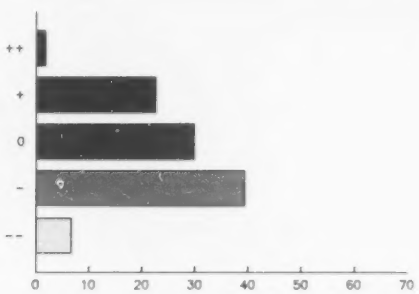
2. Regrettably, little change is expected in Tennessee's supply of skilled workers.



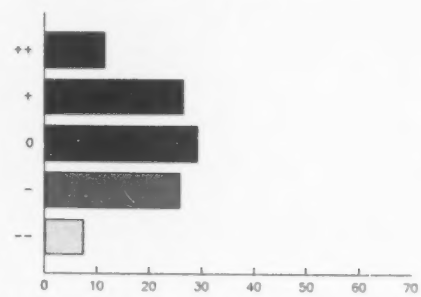
3. Business costs are predicted to increase more than related revenue.



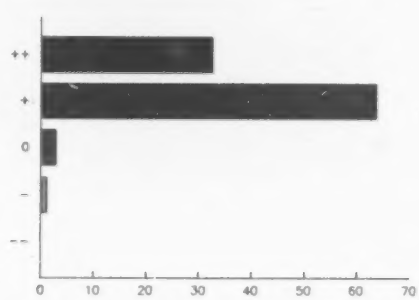
4. Panelists foresee a stable or declining unemployment rate. Their concern is for its effect on other critical issues.



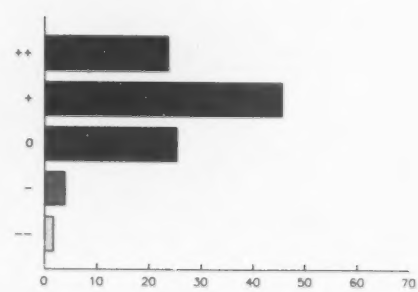
5. Supply of capital investment funds remains fifth most critical issue for 1988 as for 1987; little change is expected.



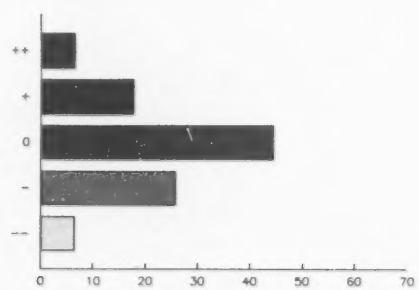
6. Panelists predict rising energy costs in 1988.



7. Heightened demands for wage rate increases are anticipated.



8. Cooperation between labor and management is expected to remain unchanged.



More than 85 percent of the panelists expect business costs relative to revenue to rise in 1988 compared to 1987. An overwhleming majority (70 percent) feel this ratio will rise slightly, and another 15 percent expect moderate to substantial increases.

Panelists also link the unemployment problem to the second most critical problem facing Tennessee -- the scarcity of skilled workers. This West Tennessee manufacturer states:

As unemployment levels fall, the quality of unemployed persons decreases. From a manufacturing standpoint, this is a growth-limiting factor, as only a small percentage of trainees can be utilized at a time.

5. Supply Of Capital Investment Funds (score = 88)

Little change is expected in the supply of capital investment funds. A West Tennessee trade executive and a service sector panelist from East Tennessee feel that this is the most critical issue for 1988.

All economies are keyed to growth. Without a major supply of capital investment funds, growth will be curtailed.

(This issue) continues to be the major impediment to economic growth in Tennessee.

6. Cost Of Energy (score = 83)

Nearly a third of Tennessee business executives who responded to the Outlook '88 survey expect moderate to substantial increases in the cost of energy. This issue is considered critical by 52 percent of the East Tennessee panelists. About 25 percent of panelists from the rest of the state list energy costs among the critical issues.

A service sector panelist observes:

With increasing electrical rates and gas rates, we can no longer compete with surrounding states. TVA rates are adjusted to keep residential rates low and industrial rates higher. While that is good for the homeowner, it is not good for business and industry. We need to get the nuclear plants on line, produce cheaper electricity, lower overhead and adjust rates to compete.

A manufacturer who agrees adds:

Valley ratepayers have been paying many millions of dollars for nuclear plants that are either cancelled or inoperative. High industrial rates continue to drive energy-intensive industries out of Tennessee. True cost-of-service pricing for the entire system would be a step in the right direction.

7. Demands For Wage Rate Increases (score = 81)

Heightened demands for wage rate increases are expected. Panel comments indicate that the most critical nature of this issue is seen in its relationship to other important economic issues. For example, a West Tennessee business executive selected this issue as the "most critical" one:

Demands for wage increases will be higher, with the inflation rate higher than in 1987. These demands are coming at a time when increasing total costs are disproportionate to revenues earned. Therefore, industry will be less able to satisfy demands and remain competitive.

A manufacturer from Middle Tennessee summarizes the problem as it applies to Tennessee:

Demands for wage rate increases and scarcity of skilled workers are dependent on each other. Our Tennessee economy is beginning to change from a right-to-work state to a union - automotive-influenced state. Pressures to align with a union scale (a la Detroit) will become a dominant factor causing smaller nonunion plants many frustrations in years to come.

8. Labor-Management Cooperation (score = 72)

Critical concern of the manufacturing sector for labor-management cooperation places this issue among the eight most critical issues facing Tennessee in the coming year. The weighted average score given by this industry group was 102 as compared to a score of 68 given by the next highest response (finance group). The comments of four manufacturers who chose this issue as the most critical one for 1988 provide greater understanding of the importance of labor-management cooperation to tomorrow's manufacturing climate in Tennessee.

Employees' attitudes regarding productivity must improve. We must be able to compete with countries with wage rates that are 25 percent of ours or less. Labor and management must work together to increase productivity and promote enthusiasm to regain our competitive edge. By doing so we can maintain or improve our standard of living and preserve factory jobs that are very necessary to keep the cross section of our population employed.

The outcome in this area can have a long-term effect on continued Tennessee industrial development. Strong union developments at Nissan, in addition to Saturn, could adversely effect further new industrial developments beyond 1988.

The automotive industry is traditionally affiliated with labor unions. The influx of this industry to Tennessee will create management problems associated with the demands of organized labor.

AFL/CIO and UAW have targeted Tennessee (specifically Middle Tennessee) for all-out organization. The "Jobs for Justice" campaign threatens Tennessee's relatively good labor-management environment. Three things must be done: (1) management must do a better job of making unions unnecessary; (2) the public and private sectors must work together in stimulating a good work environment; and (3) we need to close the loophole in our right-to-work law so that hiring practices like those at Saturn are clearly contrary to our state law.

Although manufacturers are clearly more concerned about future labor-management cooperation, they expect no more deterioration in this area than panelists from other industry groups. Approximately a third of the respondents from each industry group look for a worsening in labor-management cooperation in 1988 as compared to 1987. One should note, however, that 68 percent of the panelists believe that cooperation will be the same or better in 1988.□

1988 PANELISTS COMMENT ON

EAST

Consulting Engineer: Tennessee is in an economic growth period due to strong governmental leadership, public-private partnerships,and an excellent work force. The training offered at the technical institutes, community colleges and UT is excellent and assists us greatly in attracting new high-tech businesses.

A Manufacturing Executive: Tennessee remains economically strong because of location, interstates, climate and right-to-work laws. Significant negatives include weak banking, a perceived degradation in government/business relations and creeping taxation changes (tax on consultant software, tax on repair services, etc.).

A Construction Executive: Strength: the continued diversification of Tennessee's industrial base, utilizing a work force that is trainable. Weakness: failure of many rural counties to provide a tax base sufficient to finance education at the primary and secondary educational level.

A Manufacturing Executive: Subsequent to the stock market adjustment and economic uncertainties, Tennessee will share in a general downturn in the economy. Recession and inflation are looming. The severity depends on the control of federal deficits.

A Business Leader: Tennessee's economy should continue to surpass the national economy. However, to sustain this level, Tennessee will have to increase its efforts in the area of education and training for new and growing markets worldwide.

A Business Consultant: I believe the current economic climate could adversely affect Saturn plans; Nissan is not doing well in the market, and that could affect employment in the Tennessee plant as well. I believe we will see the beginning of a recession within the next 12 months, but the real impact in Tennessee won't come until 1989.

A Retail Trade Executive: Tennessee is in a very favorable position to move ahead of other southern states if we take advantage of our strength and improve our school systems.

A Financial Consultant: Our strength is our people. I feel 1988 will be a year of leveling out for the economy. The stock market adjustments should slow down risktaking; therefore, growth should be slower. The national elections will probably keep interest rates down. Tennessee's varied economy helps us ride out storms. In addition, our tax system needs revision. A state income tax appears to me to be imperative.

A Construction Executive: It is impossible to separate Tennessee's economic outlook from that of the nation, especially now after the stock market crash in October 1987. Two things that 1987 and 1929 have in common are an active stock market and predictably irrational participants. I know because I had been in business for four years when the crash occurred in 1929.

A Manufacturing Executive: I feel that Tennessee's overall economic outlook for 1988 will be much the same as the national economy. The economy in this election year will continue to grow from 1987, possibly 4 to 5 percent. Since Tennessee has a relatively broad base of industries, the overall strength should remain good. I continue to remain concerned about energy costs, specifically electricity. The rate increases this year have added several hundred thousand dollars to the cost of operating my plants, with no additional benefit. Since these increases are basically cover-ups for years of poor management by TVA, they become that much harder to deal with. I believe that in the long run, this will be detrimental to our ability to grow in our overall manufacturing economy.

A Business Consultant: Based on what I see as the factors about to influence our state's economy, (such as rising interest rates and perhaps declining markets) now is the time to plan to offset the expected negative impacts. In my opinion, an increased emphasis on international trade is important in this regard. The emphasis should be twofold: 1. continue to recruit foreign industry into the state (of course with the idea of bringing in foreign investors) and 2. expand foreign markets for Tennessee goods and services.

MID

A Manufacturing Executive: Tennessee has an adequate supply of labor and capital to sustain a growth pattern. Our taxation base must be improved and strengthened to support growth. We must face up to a moderate form of income tax, and the businesses and people benefiting from our economy must support it with additional taxes.

An Attorney: If the national problems which affect Tennessee and every other state could be solved with reasonable dispatch, Tennessee's outlook would be much brighter. Without resolution of those problems, the outlook is grim. In the last decade, personal and business bankruptcies have increased dramatically. In the recession of 1988 and subsequent recessions, bankruptcies will increase geometrically.

Nationwide, there has been significant movement of labor from the relatively high-wage industrial sector to the relatively low-wage service sector. Tennessee labor, which up to now has been relatively insulated from that unsatisfactory movement, is likely to see an increase therein in the coming recession. We can hardly take comfort in a decreasing rate of unemployment when accompanied by such a result.

Finally, Tennesseans and Americans need to change their habits of spending and saving. Japan is rapidly replacing the U.S. as both the leading industrial nation and the world financial center. One major reason is that each Japanese saves 17 percent of his or her income, and the American, only 5 percent.

A Banker: While I think that the current economic cycle will continue throughout 1988, one should recognize that we are at or nearing the end of one of the longest periods of economic growth in our history. Thus, we can expect a slowdown in the near future, if history is to repeat itself. This could occur in 1988, particularly if interest rates continue their upward trend.

A Utility Executive: Tennessee has become recognized as a superior industrial expansion and growth location to all markets. Commuter roads from

THE STATE OF OUR STATE

DLE

WEST

rural and county seat cities and towns to employment centers are badly needed. However, most of the existing roads have telephone, gas, water, and other utilities located on their right-of-ways. The costs of moving all these utilities to accommodate the roads would put substantial rate increase demands on these services.

A Manufacturing Executive: Overall, Tennessee's economic outlook for 1988 is pretty good. Saturn Corporation and supportive suppliers will start to make an impact on the Tennessee economy. The Governor's continued push for foreign (Japanese) investment may be good for the state, but probably is robbing jobs from other areas of the country.

A Manufacturing Executive: I believe the Tennessee economy will continue to grow in 1988. The state will attract new manufacturing and service industries because of the auto plants and the American Airlines HUB. The low value of the dollar will help the footwear and garment industries.

A Labor Consultant: Tennessee is experiencing significant growth; however, it is unmanaged and unplanned growth. New businesses are locating here, but we are also seeing a demand for services--new roads, new utilities, more social services, larger schools, more aid to homeless people. Tennessee's people and government are not accustomed to providing many high-cost services. New growth will require many changes. Foreign competition and the trade imbalance, fueled by lack of consumer confidence in out-of-step American goods, have made company competitiveness a major bargaining issue. Despite a "strong economy," the buying power of the average worker is down. As the U.S. economy sees rising prices and rising interest rates over the next few years, workers will panic and ask for more, while businesses will feel pressure and offer less. Only strong leadership at all levels and in all sectors will get us through the next five years.

An Industrial Consultant: Strengths and weaknesses vary across the state of Tennessee. It is difficult to say whether Tennessee has any one problem greater than 40 economically-depressed counties. West Tennessee is in dire need of additional four-lane highways. East Tennessee has similar problems in highways and education. To survive in the 90s, our educational system must be improved to meet the needs of the industrial and service industries.

A Trade Executive: Tennessee will perform better than the nation in general. New industries and investments in Tennessee opt for better performance than the nation. However, higher interest rates, higher taxes, and consumer debt will put the brakes on the economy, especially with the continuing weakness of the dollar.

A Business Leader: Tennessee must be braced for a massive campaign for unionization.

A Manufacturing Executive: Tennessee's economy will fare better than the U.S. in 1988, although both appear headed for a recession. The state's farmers had a better year in 1987 than expected and 1988 could very well continue in that trend.

A Banker: It is generally felt that Tennessee's overall economic outlook should be better than the nation's. I feel that our tremendous strides in the last two years have fueled growth. But what happens to the strength of the U.S. dollar (+ or -) will affect the goods manufactured and sold in our state. We are part of the whole and cannot be separated economically.

A Hotel Executive: The 80s have been an outstanding period in the growth of our state. 1988 should see continued improvement in the state's economy and a continued increase in its competitive position in the U.S. (especially Nashville and Memphis). The high percentage of low-income, undereducated people of the population is the real challenge. The strengths are many and obvious--lifestyle, climate, position, transportation, business climate, etc.

A Manufacturing Executive: Tennessee's overall economic health looks fairly good. The reason I think it will be down slightly is based on my projection of an overall decline in the national economy, which I feel will be due mostly to costly governmental interference and the "seemingly" uncontrollable national debt.

A Business Leader: Tennessee's major areas of strength include business-state government cooperation, supply of transportation services and logistic support, and availability of reasonably-priced energy. The state has been more aggressive in attracting and securing more industries into the state by emphasizing these areas. However, there needs to be more emphasis in providing skilled workers to utilize more Tennessee residents and eliminate the necessity of recruiting and importing from other sections of the country--especially in the technical-mechanical areas. Tennessee's vocational/educational services need to emphatically address this deficiency.

A Manufacturing Executive: Metropolitan areas will continue to grow and prosper, but I feel the rural areas will suffer more than they have in the past.

A Manufacturing Executive: Tennessee's overall economic outlook for 1988 should show some improvement over 1987. Business activity and construction will be the stronger areas, with housing construction following. If we are to upgrade our level of skilled employees and lower our unemployment figures, we need to upgrade our academic programs, primarily at the high school level, and strive to instill a desire in students to continue their education after high school.□

THE U.S. ECONOMIC OUTLOOK

by John W. Mayo

Although the stock market crash of October 1987 has cast a shadow of uncertainty on the economic outook, recent statistics for Tennessee and the U.S. have generally been very favorable.

Despite considerable uncertainty regarding economic performance in the wake of the New York Stock Exchange crash of October 19, 1987, the necessities for both public and private planning require that a "most likely" national economic outlook be developed. Indeed, given the important historical linkage between national economic activity and Tennessee's economic performance, it becomes critical to get as clear a picture as possible regarding the national economic outlook if we are to understand the state's economic prognosis.

To determine the economic outlook for the U.S., we consider the major components of gross national product (GNP). Although we find that there is considerable downside risk, the current outlook for the national economy is one of modest economic growth for 1988-1989. The year 1990 is the first year of very slow growth, followed by modest growth thereafter.

Financial Markets and the National Economy

Behavior of financial markets has always been somewhat perplexing to economists. Indeed, one of the most widely held theories of stock price performance is that of Professor Maurice Kendall, who asserted in 1953 that stock price movements exhibit an essentially random nature. This "Random Walk" theory has since been popularized by Professor Burton Malkiel in *A Random Walk Down Wall Street* (Norton Books, 4th Edition, 1985).

$
Federal Budget Deficit
Foreign Trade Deficit
R. J. LeFevre

Although the reasons given for the October stock market crash are numerous, the most frequently mentioned are America's twin deficits--the federal budget deficit and the foreign trade deficit.

While this essentially agnostic view of stock price movements has generated significant interest among financial economists, policymakers have been left groping for answers to the questions of "Why did the market crash?" and "How will the crash of the stock market affect real economic performance?"

The reasons given for the October stock market crash are numerous--rising interest rates, the apparent discord over the Louvre Accord, the continued decline of the dollar, etc. Most frequently mentioned, however, are America's twin deficits--the federal budget deficit and the foreign trade deficit. From fiscal year (FY) 1981 the federal budget deficit grew from $53 billion to over $220 billion in FY 1986 before declining to $149 billion in FY 1987. (See Figure 1.) Along with this annual growth, the national debt, which stood at just under $1 trillion in 1980, has more than doubled during the Reagan Administration. This situation has raised basic questions around the world about the U.S. living "beyond its means." Moreover, as the national debt rises, the ability to sustain traditional government functions is undermined. For instance, in 1980 the share of personal income taxes necessary to pay "net interest" on the national debt was 13 percent. Today, 23 cents of every personal income tax dollar must be used to pay owners of federal debt. Thus, the amount of purchases of government goods and services, for every tax dollar spent, is reduced as the share of the budget going to net interest has increased.

The second major U.S. deficit--the merchandise trade deficit--has also caused considerable concern to financial markets. As seen in Figure 2, the Merchandise Trade deficit has grown from $22 billion in 1980 to over $140 billion in 1986. This deterioration in our trade balance, primarily over the 1982-1987 period, led to the emergence of the U.S. as the largest debtor nation during 1987 and caused many analysts to anticipate further declines in the dollar relative to other foreign currencies and a resurgence of inflation and high interest rates, both of which are injurious to stock market performance.

Perhaps more important than the existence of these twin deficits has been their persistence over time, which has been interpreted as an inability of our nation's leaders to substantively address these imbalances. Each of the past four years, the Congressional budget process has openly and unequivocally rejected the Administration's budget proposals. Yet, while both Republican and

FIGURE 1
U.S. Federal Deficit
Unified Basis, FY 1981 to FY 1987

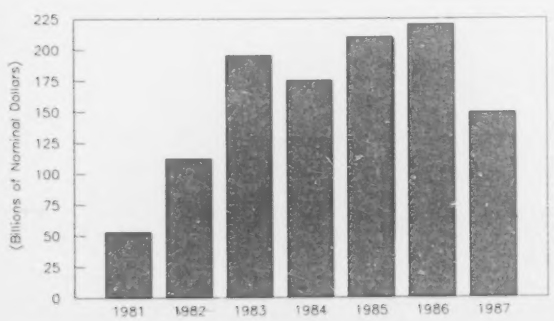
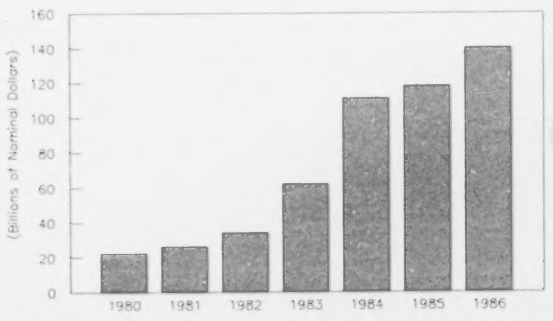


FIGURE 2
U.S. Merchandise Trade Deficit
1980 - 1986



Democratic members of Congress are in agreement regarding the unpalatability of the Administration's proposed budgets and have all railed against the evils of the apparent "permanency" of the federal budget deficit, substantive deficit reduction measures have only recently emerged. Similarly, during 1987 a widespread feeling grew that America had lost its "competitiveness" in world markets. Congressional hearings and academic conferences around the country tried to understand why such large trade deficits could persist (and grow), given that the dollar peaked in value relative to most other currencies in early 1985. Congressional measures were seen as protectionist, and the Administration's trade enforcement and negotiation policy was seen as lethargic.

The immediate consequences of the market crash were a dramatic signal that economic growth during the 1980s could no longer be guaranteed. The crash created a clear deflationary shock. Accordingly, the risks of inflation have been reduced, while recession risks are higher.

Unlike the stock crash of 1929 (see the following article), the Federal Reserve Board's response to the 1987 crash was immediate and supportive. Clearly worried about a liquidity crisis, the Fed reacted by pumping reserves into the banking system. Interest rates declined immediately and bond markets rallied. The response by fiscal authorities has been slower. On November 20th Congressional leaders and White House negotiators decided on a plan to cut the budget deficit by $76 billion over the next two fiscal years. The plan, which consists of both spending cuts and tax increases, must still pass both houses of Congress before becoming law.

Given this discussion of why the stock market crash occurred, the natural question to ask is whether the recent volatility of financial markets will affect national economic activity in either the short or long run. To address the question most meaningfully, it is useful to recall that total national economic activity during any given year (GNP) is the summation of consumption (C), investment (I), government (G), and net trade (exports (X) minus imports (M)). That is, GNP = C + I+ G + (X-M). As economic activity in these right-hand side sectors increases, so does GNP. Conversely, if C, I, G, and (X-M) grow slowly or fall, so will gross national product.

Consumption

The importance of the role that consumer spending has played in the past five-year economic expansion cannot be overemphasized. This critical role has two dimensions. First, consumption constitutes the largest component--about two-thirds--of GNP.

FIGURE 3
U.S. Growth in Real Personal Consumption Expenditures
1982.3 - 1987.3

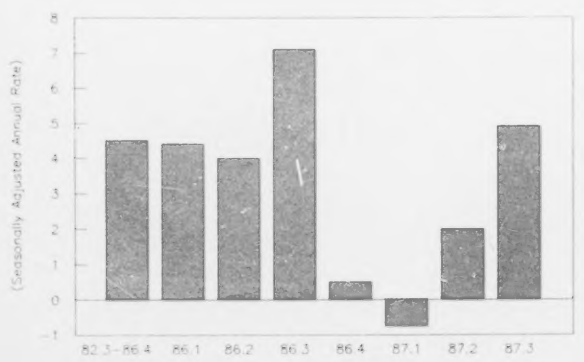


FIGURE 4
U.S. Personal Savings Rate
1982.1 - 1987.3

Robust consumer spending growth rates have generally exceeded the growth rate in personal income during recent times, indicating that consumers have either been forced, or have been willing, to reduce their savings rate in order to continue current consumption patterns.

Second, the growth rate of consumer spending has been sufficiently robust since 1982 to overcome periodic weaknesses in investment (e.g., 1987) and secular weaknesses in the foreign trade sector (i.e., 1982-1987).

During 1987 the growth in consumer spending has remained reasonably strong. The quarterly growth rates (annualized) for 1986 and 1987 consumer spending are seen in Figure 3. For purposes of comparison, the average growth rate of consumer spending over the period of economic expansion (1982.3 to 1986.4) is also shown. Figure 3 indicates that, despite a slowdown in late 1986 and early 1987, consumer spending has remained healthy through the third quarter of 1987.

It is important to note that the robust consumer spending growth rates have generally exceeded the growth rate in personal income during recent times, indicating that consumers have either been forced, or have been willing, to reduce their savings rate (i.e., savings/income) in order to continue to pursue current consumption. This decline in the savings rate is seen in Figure 4.

In normal times, the duration of the current expansion would have led economists to ask whether consumer spending could continue to propel the economy. But given the shock to financial markets in October of 1987, the question of the future growth path of consumer spending has catapulted to *the* question regarding future economic activity. In that respect, the stock market crash will have a potentially dual effect on consumer spending. First, the 30 percent decline in the value of equities undoubtedly reduced the wealth of many Americans. This "wealth effect" can be expected to slow the growth rate of consumer spending from pre-crash expectations. Nevertheless, several factors suggest that the wealth effect should be relatively modest. First, only the 25 percent of American households which own stocks were directly affected. Second, the rapid increase in stock prices prior to the October crash was viewed as temporary. Consequently, some (perhaps significant) portion of the decline in stock prices was viewed as a correction to temporary overvaluation. The transitory rise and fall of share values suggests few or no effects on permanent consumption from that portion of stock price movements which were viewed as ephemeral. Third, the rapid decline in interest rates immediately succeeding the crash created offsetting wealth increases via the rally in bond prices and, more tentatively, through possible housing price increases that could follow an interest rate-driven acceleration in the demand for housing. And finally, empirical research to date indicates that the propensity to consume from wealth changes is .04. This suggests, that, even for that portion of the wealth change which is viewed as permanent, consumers will reduce spending by only four cents for every one-dollar decline in wealth.

The modest nature of the direct "wealth effect" related to the collapse of stock prices does not indicate that the consumption growth pattern will be unaffected. Despite the fact that only a relatively small proportion of households own stock, it is possible that the decline in stock prices will erode the broad base of consumer confidence. This concern is especially acute, given that consumers have pushed the savings rate to all-time lows, and retrenchment is a natural reaction to erosion in consumer confidence.

So far, surveys of consumer confidence in the wake of the stock market crash have shown that consumers have reacted negatively to the rapid decline in share prices. The extent of the negative reaction has been small, however, and has rebounded moderately since the initial response to the crash. As reported by Wharton Econometrics, about two-thirds of surveyed consumers did not believe that the stock market crash would affect them in any significant way. Moreover, consumer confidence has generally been largely determined by inflation and unemployment, both of which remain low compared to other years in the 1980s.

Despite these early survey results, many consumers (along with economic analysts) are adopting a "wait-and-see" attitude toward consumer spending. At present, we expect the fourth quarter of 1987 and first quarter of 1988 to absorb the brunt of the wealth-induced decline in consumption and that, for the duration of 1988, consumer spending will grow at an annual rate of 1.6 percent. While not at the level of earlier phases of the expansion, this modest growth of consumer spending should help sustain economic activity during the next year. It should be noted, though, that considerable downside recession risk exists if consumers decide to retrench.

Investment

The investment component of GNP is both smaller and more volatile than consumption. Over the course of the past five-year expansion, real (inflation-adjusted) gross private investment growth has ranged from over 30 percent (1984/83) to negative 3 percent (1985/84). Since the rapid run-up of the 1983-84 period, investment growth has been largely lethargic or negative. In 1986 real gross private investment grew at a rate of 2.8 percent, and during 1987, investment growth will be a very modest .04 percent. The recent stock market crash will dictate a cautionary stance to businesses and some moderation of discretionary capital spending.

While unrest in financial markets may temper short-run capital expenditure growth, two primary determinants of investment--interest rates and capacity utilization--bode well for investment during 1988. Following the market crash, interest rates fell sharply, increasing the profitability of capital investments for firms and reducing their (bond) cost of capital. Also, as can be seen in Figure 5, the capacity utilization rate has risen notably since 1986. Together with a steadily increasing backlog of unfilled orders, the higher level of capacity utilization suggests moderate growth

in real gross private investment during 1988. Specifically, real business investment should grow by about 6.5 percent in 1988, with some moderation in 1989 and 1990. This should contribute to economic growth in 1988. As in the case of consumption, however, considerable downside risk in the investment sector exists since, if consumer confidence wanes, business investment will not expand.

Government

The stock market crash has focused considerable attention on government fiscal policy. As noted, one of the most widely mentioned reasons for the free-fall of the stock market has been the inability of federal government officials to significantly reduce the federal budget deficit. A surge of one-time revenue inflows from tax reform and capital gains taxes, together with federal government asset sales, accounted for a sharp decline in FY 87. This decline is not expected to be repeated, absent positive action by the President and Congress.

Passage of a revised (and now legal) version of the Gramm-Rudman-Hollings (GRH) law calls for automatic cuts in spending totalling $23 billion during FY 88 if Congress and the President cannot fashion a suitable federal budget that meets the deficit target of GRH. Most recently, the "White House Leadership" budget passed by the Congress and signed by the President appears to satisfy the GRH law. It calls for deficit reductions from tax increases and spending cuts of $33.2 billion for FY88.

This most recent plan to reduce the budget deficit is a mixed blessing. On one hand, the measure should send positive signals to financial markets that the U.S. government is serious about fiscal responsibility. On the other hand, reductions in government spending combined with tax increases are, mechanically speaking, contractionary. The motivation, then, for a deficit reduction measure is not that it will have a direct stimulation effect on the economy, but rather that the signal sent by such a measure will restore confidence to financial markets and to consumers.

International Trade

For the smallest of the four major components of GNP, the international trade sector has been increasingly in the limelight, probably this is because the volume of goods and services traded in international markets has grown significantly in recent years. This growing openness of U.S. markets has increased consumer choice and provided positive competitive pressures to domestic producers. At the same time, however, the deterioration of the trade balance in recent years has caused considerable concern. In particular, it is often argued that imports, which swelled from $247 billion in 1982 to the neighborhood of $430 billion in 1987, displace jobs that would have gone to Americans. Also of particular concern is the fact that until very recently, the trade pattern continued to deteriorate despite the falling value of the dollar in foreign money markets since early 1985.

The outlook for the foreign trade sector is moderately bright. The cumulative effect of the falling dollar and the upsurge of import prices began to reduce the real merchandise trade deficit as early as the third quarter of 1986. This improvement in the recent trade statistics has been somewhat masked by the nominal effects of the falling dollar on trade balances. In particular, as the value of the dollar has fallen, the nominal value of imports has risen, despite reductions in the actual volume of imports. This response of trade flows to exchange rate fluctuations is sometimes referred to as the J-curve effect, since a falling dollar may actually worsen the nominal trade deficit before it ultimately improves.

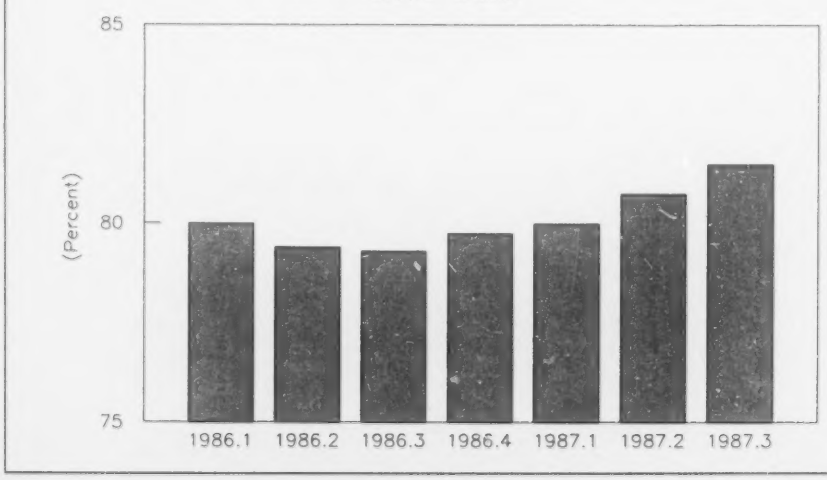
The combination of large and sustained reductions in the value of the dollar during 1988, together with slower consumer spending (on imports, among other things) will lead to a decline in the merchandise trade deficit from about $160 billion in 1987 to $127 billion in 1988. Steady improvements are seen thereafter.

Inflation and Interest Rates

Aside from the components of GNP, a complete examination of the national economic outlook requires some consideration of the likely inflation rate and interest rates in the future. There are currently two major threats to inflation in the short run. First, if the money supply is expanded rapidly in the post-crash period, it may stimulate price increases. Historically, economic research indicates that rapid increases in the money supply tend to exacerbate the underlying rate of inflation. Second, the rapid and continuing fall in the value of the dollar in world money markets will lead to increased import prices.

These threats may lead to the belief by foreign producers that

FIGURE 5
U.S. Capacity Utilization Rate
1986.1- 1987.3



Very slow growth or an actual recession in 1988 remains a distinct possibility if there is larger-than-expected retrenchment in consumer demand or too little relaxation of monetary policy.The likelihood of better-than-expected economic performance is small, but if it occurs, the source would be greater improvements in exports relative to imports.

price increases are warranted. To this point, foreign firms have generally raised U.S. prices by less than the exchange rate fluctuations would suggest in order to maintain their market share. It is unclear whether they will be able to maintain this moderation if the dollar continues to fall.

Beyond these short-run considerations, the inflation outlook remains relatively promising. Despite a fairly tight labor market, wage rate increases have been modest. Major collective bargaining agreements this year have resulted in real wage rate increases in the 2.1 to 2.3 percent range.

The deflationary effect of the stock market crash and the relatively low wage rate push on inflation suggests that the inflation rate for 1988 and 1989 should be in the neighborhood of 4.2 and 4.8 percent, respectively.

Interest rates have fallen sharply in the post-crash period as the result of an accommodative monetary policy and generally reduced fears of rapid inflationary price increases. The expectation is that the Fed will remain generally accommodative, so interest rates will remain modest in 1988. The six-month Treasury bill rate will remain below 7 percent during 1988, with long-term Treasury bonds staying in the 9.5 to 10 percent range.

Summary

The stock market crash of October 1987 has cast a considerable shadow of uncertainty on the economic outlook for 1988 and beyond. Still, recent economic statistics for both Tennessee and the U.S. have been very favorable. While numerous real and psychological factors contributed to this collapse, the root cause appears to have been the inability of America's leaders to deal effectively with the budget and trade deficits.

The impacts of the stock market crash and other factors on national economic activity are best assessed by examining the four major components of GNP. The stock market collapse initially reduced both consumer wealth and consumer confidence. The wealth effect should have a relatively modest impact on consumption; however, the prospects for consumer confidence are less clear, though a partial rebound in consumer sentiment has occurred since October.

Overall, consumer spending growth is expected to be quite modest in 1988. Lower interest rates and relatively high levels of capacity utilization should keep investment spending solid in 1988, despite the uncertainties in financial markets. Government fiscal policy during 1988 will be contractionary relative to recent years. If this movement toward a balanced budget is viewed as a significant step toward "fiscal responsibility," however, fiscal policy could sufficiently stimulate financial and consumer markets so that it proves expansionary. The continuation of a falling dollar and rising import prices should lead to modest improvements in the foreign trade sector. Considering these factors, the outlook for the major components of GNP suggests that total real economic growth at the national level should be around 2 percent during 1988.

However, very slow growth or an actual recession in 1988 remains a distinct possibility. The principal events which would result in the realization of this scenario are larger-than-expected retrenchment in consumer demand or too little relaxation of monetary policy. The likelihood of better-than-expected economic performance is small, but if it occurs, the source would be greater improvements in exports relative to imports. □

1929 and 1987: IS A REPETITION OF THE GREAT DEPRESSION LIKELY?

by Anne Mayhew

Although there have been many assurances that the economy has changed since 1929 so that a Great Depression won't be repeated, the relationship of stock market performance and performance of the economy remains a bit mysterious.

The sharp drop in share prices in October of this year alarmed the millions of Americans who assume that the market crash of 1929 triggered the Depression of the 1930s and caused unemployment and soup lines, suicides and deprivation. The inevitable question is whether our economy today is so structured that the drastic declines in share prices will cause output to fall and unemployment to rise, thus causing a repetition of the Great Depression of 1929.

History

Following the dramatic rise in share prices that had begun in earnest in 1927, the great bull market of the 1920s "crashed" in October of 1929 with a two-day decline in the Dow-Jones Industrial Average of 23 percent, precipitating by far the heaviest trading volume ever seen on the New York Stock Exchange. Earlier that year the economy had already begun to decline. Gross national product was $104.4 billion in 1929. In 1930 (measured in the same 1929 dollars), it dropped to $95.1 billion; in 1931, $89.5 billion; and in 1933, it was down to $74.2 billion. In four years the output of goods and services of the American economy had fallen by almost 30 percent. The value of household purchases in 1933 was worth only 82 percent of 1929 figures.

This decline in output in the economy was, of course, accompanied by growing unemployment and bankruptcies. Approximately one of every four workers was without work by 1933, and even after recovery began, unemployment ranged

There is widespread agreement that six major weaknesses in the economy of the 1920s caused the depression of the 1930s: consumer demand, hard times in agriculture, investment, weakness in the international economy, the state of the banking system, and the role of government.

between 14 and 20 percent throughout the rest of the 1930s. The rate of business failures rose from 104 firms per every 10,000 firms listed with Dun and Bradstreet in 1929 to a rate of 154 per 10,000 in 1932. Prices fell along with the demand for goods, and even those businesses that did not actually close their doors suffered falling revenues. These measures, as telling as they are, fail to convey the misery created for the millions who worked short hours, for the family members whose breadwinner was unemployed, and for the small businessmen whose incomes were drastically reduced, but who hung on rather than declare failure.

Causes of the Great Depression

Given these events, economists naturally questioned the relationship of the market crash and the ensuing depression. Did the stock market crash cause the Great Depression of the 1930s? Almost all of those who have studied the events closely would answer with confidence: "No." There are three principal arguments for this conclusion.

1. The decline in the economy which actually began before the market crash caused the inevitable downward movement of stock prices to be more precipitous. For example, industrial production began to fall after reaching a peak in June of 1929, and the Federal Reserve Index of Industrial Production had declined from 126 to 117 by October.

2. Although stock market performance is one of a number of leading indicators used by forecasters, it is not a good predictor when used alone. Allen Sinai, in a recent Shearson-Lehman Brothers publication, noted that there were 21 abrupt declines following bear markets between 1896 and 1945, but that only 10 of those preceded recessions or depressions.

3. The real reasons for the Great Depression were underlying weaknesses in the apparently strong economy of the 1920s. Certainly the market crash was one jolt to the economic system, but had underlying weaknesses not already existed, the market crash would not have been followed by a depression that we still remember after 50 years.

It seems obvious, then, that the next question we need to ask is whether the U.S. economy of the 1980s exhibits similar weaknesses that might cause the market crash of 1987 to be followed by a collapse like the crash of 1929.

Weaknesses Leading to the Depression

There is widespread agreement that six major weaknesses in the economy of the 1920s caused the Depression of the 30s: consumer demand, hard times in agriculture, investment, weakness in the international economy, the state of the banking system, and the role of government.

Consumer Demand

Consumer demand, and particularly consumer demand for the new goods of the period, could not be maintained at the high level achieved during the 1920s, a remarkable decade

Reginald Marsh's etching, "Bread Line -- No One Has Starved," reflects the misery of Great Depression victims in 1932. (Collection of Mrs. Reginald Marsh.)

for the American economy. After a relatively brief post-war disruption and adjustment, the U.S. entered a period of prosperity that saw the introduction of a variety of new consumer durables. The radio, the electric "icebox," or refrigerator, washing machines, and the vacuum cleaner were all new to American households during this period. And, perhaps most importantly, Americans were buying automobiles. By 1921 they had purchased almost 1.5 million, and by 1929, nearly 4.5 million.

Through the 1920s consumer expenditure grew strongly. Except in two years, the rate of increase was well above 5 percent. In 1929 total consumer outlay grew very little until 1930, when consumer expenditures took a sharp drop and continued downward. Of course, this may have been due simply to the fall in income. Since consumption expenditures are closely related to current income, it might be more accurate to say that the fall in income in 1930 caused the fall in consumption. However, econometric tests indicate that the relationship between consumption and current income changed sometime during 1929 or 1930 and that there was a greater decrease in consumption than could be accounted for simply by the fall in income. Economic statistics for the 1920s are not thorough, but students of the era think that four factors contributed to this fall in consumption: credit and installment buying, slowdown in consumer demand for durables, growth of wage-earner productivity, and loss of consumer confidence.

Credit and installment buying. Many households were in debt by 1929. Half the new cars purchased in the '20s were purchased on credit, and installment buying was widely used for other durable goods. Since households spent a larger portion of current income to pay off accumulated debt, the purchase of new durable goods could not continue at its old rate.

Slowdown in consumer demand. By 1929, consumer demand for durables was becoming saturated. Replacement demand could not be expected to equal the demand for new goods being purchased by households. If population growth had been higher, with a high rate of new household formation, some of the slack would have been taken up. However, after 1915, immigration dropped sharply, and with it the rate at which new households were established.

Growth of wage-earner productivity. Productivity per wage-earner increased by 28 percent in all manufacturing industry between 1923 and 1929. Yet, because wages and prices changed very little over the decade, income derived from other sources grew at a more rapid rate than did wage incomes. As a result, increased shares of national income went to the relatively wealthy: in 1920 the richest 5 percent of the population received 22 percent of total income, and by 1929 they received 26 percent. This share represents a substantial redistribution of the total pie during the decade. The size of the pie was growing, but the incomes of the bulk of the population--population that would be likely to buy most of the manufactured goods that the economy was capable of producing in greater and greater quantity--were not increasing rapidly enough to allow this.

Loss of consumer confidence. Obviously, even those Americans who did not own shares were disturbed by the market crash, and many people decided to postpone purchases. Economic historians are not able to measure past "confidence," but few doubt that a loss of consumer confidence was an important contributing factor to the Great Depression.

Is there danger today that consumption expenditure might fall in the same way that it did in 1929 and the years that followed? The rapid rate of growth of consumer indebtedness in recent years, the recent consumer binge of buying, and the fact that neither replacement demand for consumer durables nor the rate of new family formation in this post-baby boom era will be sufficient to maintain consumer demand seem to be causes for concern.

Hard Times in Agriculture

A second weakness in the economy was the result of the hard times in agriculture which had actually begun earlier, in the 1920s. The ratio of prices received by farmers to prices paid by farmers (the parity ratio) remained near to or over 100 throughout the years from 1910 to 1920 and was far above 100 during the years of World War I. This ratio then fell to 80 in 1921 and rose only slowly after that, reaching 95 in just one year (1925). After 1925, prices of several important agricultural commodities began a long downward slide that continued into the depressed 1930s. Farm income from a number of basic commodities such as cotton and hogs reached a peak in 1925 that was not achieved again until the years of World War II.

Two factors caused this situation to have serious impact upon the economy as a whole. The first was that American farmers had gone heavily into debt during the golden years of 1910-20, when farmers bought Midwestern farmland that had doubled in value. Total debt of farmers rose from $3.2 million in 1910 to $8.5 million in 1920, continued to rise slightly in the first part of the Twenties, and then held steady. However, the decision to assume additional debt that had seemed so practical in the earlier decade now weighed heavily upon farmers as they faced repayment in an era when the prices they received were now actually beginning to fall. The farmers, businessmen whose net revenues were falling as debt service took more of their gross income, reacted by reducing household consumption expenditures and thereby spreading the negative effects.

The second reason why falling agricultural prices had a serious impact was that a substantial portion of the American population still lived on farms. In 1920, 13 percent of the labor force was directly employed in agriculture; by 1930 it was 8 percent.

Although publicity given to the financial problems of farmers today has made us well aware of their difficulties, it is unlikely that the agricultural sector could play the same role in contributing to a depression today that it did in the '20s and '30s, particularly since current employment in agriculture represents less than 2 percent of the labor force.

Investment

From 1921 through 1929 the level of investment--investment in new capital equipment and investment in buildings--

The rapid rate of growth of consumer indebtedness in recent years, the recent consumer binge of buying, and the fact that neither replacement demand for consumer durables nor the rate of new family formation in this post-baby boom era will be sufficient to maintain consumer demand seem to be causes for concern.

experienced one of the highest rates of capital formation relative to gross national output of any economy at any time for which we have statistics. Growth in manufacturing output during the decade was accomplished without any increase in employment in manufacturing. This is another way of saying that because of the deepening and widening of the capital structure of the economy, output per worker in manufacturing industries rose rapidly. One estimate is that between 1919 and 1929 the horsepower per worker rose from 3.25 to 4.86.

This situation would not have presented a problem except that by 1929 the United States was a country of new factories that contained a lot of new equipment, much of it put in place to produce new goods or to produce old goods using new producers' equipment. Since the new equipment did not need replacing and few new goods were introduced, investment in capital equipment and factory buildings fell off drastically.

To make matters worse, there was also a fall in residential construction that had actually begun in the middle of the '20s. Total construction expenditures peaked in 1926 and then moved down each year thereafter until 1934. By 1928 residential construction had fallen by 17 percent, in spite of a constant index of building costs and only a very slight increase in interest rates. Apparently the decline was caused by the slower rate of population growth and family formation and the rapid rate of construction in the years just after World War I. The resulting saturation of demand among those who could afford new housing was partly reflected in rising foreclosure rates and a fall in the rent index in the late 1920s.

What happened in 1929 was that a downward trend in one component of investment spending--residential construction --was reinforced by an even sharper drop in investment in equipment. This decline in business investment cannot be accounted for by a rise in interest rates because interest rates fell sharply after October 1929. Although they had increased in 1928 and 1929 as the Federal Reserve System (FRS) applied pressure to bring speculation under control, the FRS quickly lowered discount rates after the market crash (the discount rate at the New York Federal Reserve Bank was reduced from a high of 6 percent to 4.5 percent and then as low as 2 percent in 1930), and commercial rates fell in like manner.

Whether the market crash made it difficult for firms to raise funds to be used in the purchase of capital goods can be only a partial explanation of the continued low level of investment, because it is by no means clear that the rapidly rising share prices before September of 1929 were a primary cause of the purchases of investment goods to that point. First, new share issues were designed largely to refinance the capital structure of firms after they had otherwise financed the purchase of new capital equipment. Secondly, it is estimated that at least a third of the new capital issues in 1929 were by the new investment trusts, one of the innovations of that period on Wall Street. These funds were not raised for purchase of capital equipment and may or may not have found their way to such use. The same could be said about many of the other dollars spent to buy shares in 1928 and 1929. However, it certainly is true that the continued fall of share prices made issuance of new stock difficult. Falling bond yields would have made it less costly to use that route to borrow long term, but it is unclear how much this might have offset the difficulty of using equity finance.

Since total investment expenditure fell from $16.2 billion (in 1929 prices) to $800 million by 1932, to $300 million by 1933 and remained at less than $10 billion in all except one of the remaining years of the 1930s, something more than a loss of confidence caused by the market crash must be found to explain this pattern. It seems likely that by 1933 or 1934 there would have been a greater replacement demand for capital equipment had it not been for the fact that the depressed conditions of the economy as a whole made businessmen wary of purchasing. The very depth of the recession served to make it last longer.

Is the market crash of 1987 likely to lead to a collapse of investment expenditure? Investment as a percentage of GNP has been higher in the recent upswing of the economy than in the previous expansion that took place from 1975 to 1979 and there also seems to be some basis for concern about the residential construction component of investment spending, since a slower rate of population growth and a slower rate of family formation could have the same depressing effect on the economy of the late '80s and the '90s as it did upon the economy of the late '20s and '30s, but we can safely conclude that in neither case is it the stock market that we need worry about.

Weakness in the International Economy

Other weaknesses in the economy of 1929 could be pinpointed in the international economy. Many problems can be traced back to World War I and the settlements that followed. In addition, the collapse of the international economy in 1930 and the years following--massive trade protection measures in all countries, and the virtual paralysis of the international financial system--made the depression in the United States much worse, since the U.S. economy, although then far more independent of international trade than it is today, still did depend upon foreign markets for exports and upon foreign suppliers for imports.

In the 1920s, the United States was a net exporter of goods. Foreign nations were able to pay for the goods that they bought from us in excess of those that they sold to us largely because of the flow of private lending and investment during the decade. With rising stock prices in 1927, '28, and '29, foreign lending was reduced in favor of the high yields

available domestically. This worsened the situation of countries already having difficulty paying for imports of American goods and became a particularly serious problem for countries that relied heavily upon exports of agricultural commodities and other raw materials.

The United States which had increased tariffs in 1922, did so again in 1930 in response to concern about flagging demand. The Hawley-Smoot Tariff Act of 1930 infuriated many in the rest of the world, who viewed it, in the face of a collapsing international economy as an effort to close the doors to international producers trying to sell to the richest and largest economy in the world. Many retaliated; however, even without retaliation, much damage would have been done. By raising tariffs and thereby excluding imports, the United States made it even more difficult for nations to buy goods from us when they saw private lending from the United States coming to a halt. Thus exports fell drastically and worsened the depression.

Yet, it is not possible to attribute the depression to the fall in exports, because exports represented only a small percentage of our gross national product. Furthermore, it is not possible to attribute the fall in exports to the stock market crash except insofar as people reacted to that crash by looking for cures that made the disease worse. However, we do need to worry about that parallel today. If we react to concern about the stock market and the economy by protecting domestic producers through the use of tariffs and other restrictions, we run the danger of hurting ourselves as well as others.

The other possible parallel that is disturbing is the fact that the system by which the monies of many different countries are exchanged in international payment is again subject to great stress and strain. If people and governments in other nations decide that they should "get out of dollars"--that is, exchange dollars and dollar assets for other currencies or assets denominated in other currencies--the value of the dollar will fall. This situation might increase our exports, but it could also set in motion a series of less happy events. Foreign nations which owe U.S. banks could have trouble earning the dollars needed to service their debts and thus put additional strain on American banks. Other nations might be tempted to retaliate because the effect of a fall in the value of the dollar would be much like an increase in U.S. tariff rates: it would make it harder for foreigners to sell to us and easier for us to sell to them. Even worse would be the possible collapses of the international payment mechanism and the system of international trade.

State of the Banking System

The fifth weakness in the economy of the late '20s is one that some are inclined to think was the most important of all: the banking system was in a state of disarray. The Federal Reserve System, created in 1913 and 1914, was superimposed upon an older system in which banks could seek either a state charter or a federal charter. Banks holding a federal charter were required to be members of the FRS; state-chartered banks were not. The system was created during a period when the number of banks grew rapidly--from 9,000 in 1900 to more than 30,000 by 1920--in part a consequence of good times in agriculture. The non-national banks (approximately 23,000 in 1920, compared to 8,000 national banks) were, for the most part, small and rural. During the 1920s these banks began to fail in large numbers, partly because of the agricultural problems and partly because of the overabundance of banks.

Total bank suspensions, which exceeded 350 in every year between 1920 and 1929, stayed below 500 in only two of those years. In the absence of deposit insurance, these bank failures meant a devastating loss of money for many. However, up until 1930 the total deposits of the suspended banks remained relatively modest, since most of the failed banks were small, and most were in agricultural regions. However, there was little faith in the security of bank deposits. Major runs on banks began in earnest in 1930 and continued through 1933. In 1929, 659 banks failed; in 1930, 1,352 failed; and in 1933, 4,004. Of the total that suspended in 1929, only 64 (10 percent) were national banks. By 1933 one of every four failed banks was a national bank. In 1929 total deposits of suspending banks were $231 million; in 1930 they totalled $869 million; and by 1931, $1.69 billion.

These bank failures contributed to a dramatic decline in the money supply. Currency and demand deposits held by the public equaled $26.4 billion in 1929, and by 1930 the total was down to $25.4. By 1933, it totalled only $19.4 billion. The basic money supply was down by approximately 25 percent. It is relatively easy to see what happened. People who had little confidence in the security of their bank deposits reacted to any hint of bad news by converting deposits into currency. The ratio of commercial bank deposits to currency held by the public decreased from 11 in 1929 to 5.1 in 1933. People held cash. Unfortunately, those who got to the bank a little later than others found the bank out of cash, and they lost their money, either permanently or for some considerable period of time. Many of the banks under pressure (the more than 80 percent which were not members of the Federal Reserve System) had no effective way of liquidating assets or borrowing to obtain more currency, so they could only close their doors, thus spreading the panic. By March of 1933 it seemed necessary to follow the pattern already established in some states and declare a

We have learned from history, and the officials of the FRS are aware that they may need to lend to banks which are in trouble and whose failure might spark additional trouble in the economy.

banking holiday to allow banks time to try to get their affairs in order. Obviously, the impact on the economy was devastating.

Can It Happen Again?

We have had relatively high rates of bank failures in recent years--the highest, in fact, since the bad years of 1920-33. It is well known that many banks have numbers of "non-performing assets." Could we face a repetition of the banking disaster of the Great Depression? The simple and widely agreed-upon answer is "No." The creation of the Federal Deposit Insurance Corporation and the Federal Savings and Loan Insurance Corporation means that most people need not worry about rushing to banks to withdraw their deposits.

The more complicated question, however, is whether or not inappropriate monetary policy could once again contribute to a drastic decrease in the money supply, as many believe it did in 1929-33. Some economists think that the Federal Reserve System itself must be held responsible for the bank failures that resulted in the drastic reduction in the money supply in 1930 because it was too timid to "flood the system with liquidity" and because it felt no clear responsibility for the many failing banks that were not members of the FRS. In many ways the Fed did the "right things" following the market crash in 1929: they purchased securities from banks and lowered the rates at which they were willing to lend to banks. By both measures, they increased the ability of member banks to obtain liquidity and, in fact, bank reserves held steady and bank deposits with Federal Reserve Banks actually increased in 1930. By all usual measures, there was no actual decrease in the ability of the national banks to lend money. The Fed also did the "right thing" in helping banks lower interest rates immediately following the market crash and on into the Depression. However, the Fed can be faulted for not being innovative and aggressive enough in finding ways to help banks as they faced the necessity of closing their doors. Banks that remained open began to behave very cautiously and contributed to decreases in the money supply by lending more conservatively. The ratio of commercial bank deposits to bank reserves fell from 13 to 8 between 1929 and 1933. Many banks had excess reserves but were too frightened to lend, eligible customers were reluctant to borrow, and other banks could not meet their obligations to their depositors.

So far there seems reason to be optimistic about the Fed's ability to handle crises today. We have learned from history, and the officials of the FRS are aware that they may need to lend to banks which are in trouble and whose failure might spark additional trouble in the economy. The FRS has undertaken such lending. The rescue of Continental Illinois is an example of how our monetary authorities--the Fed and the FDIC--can take action to prevent a repetition of the bank failures of the '30s.

The Role of Government

Finally, what about the roles that governments play? No one seriously proposes that either federal, state, or local government budgets played a major role in causing the economy of 1929 to be so weak. The size of the federal government at the time was very small. The federal debt had grown enormously during World War I (by the standards of that time), but had then decreased steadily during the 1920s. In 1919, the federal debt per U.S. citizen amounted to $242. By 1929, it was only $139. It was only in 1932 that falling tax revenues caused the debt to begin to rise again, and then it rose only modestly for the rest of the decade. In other words, the Federal Government spent little more than it took in, even after 1933 (when the New Deal measures of Franklin D. Roosevelt began to be enacted.) Especially given the small size of the Federal Government expenditures, it seems safe to conclude that federal fiscal policy had little impact.

If there was any impact of government spending and taxation on the economy of 1929-33, it must have come from state and local governments. In 1927 state and local expenditures were more than twice as much as total federal expenditures, and 25 percent of the state and local expenditures went for construction. The total spent on construction by state and local governments was one and a half times as much in 1927 as it had been in 1922 and more than four times as much as in 1913, primarily because of highways built to accommodate all of those new automobiles. After the Depression began, the states were under pressure to reduce expenditures in the face of falling revenues and, after the initial impact of the depression, they did reduce the rate at which they were going into debt to pay for roads and other infrastructure. This reaction further reduced spending and made the depression worse.

The role of government in the economy of the '20s was too different from the role played today to allow us to draw parallels. However, there may be an important parallel between the blame currently being placed on the federal budget deficit and the blame placed on Wall Street and the stock market in the '20s and '30s. Many Americans distrusted those who worked on Wall Street, and it was easy to blame them for what happened to the economy after 1929. However, the disastrous performance of the American economy (and of the international economy) in the years 1929-1933 was a consequence of a number of interrelated factors. There is no simple explanation for what happened, just as there was no quick cure. The risk is that we may take action that is as ineffective and wrong as that taken in the first years of the Great Depression of the '30s. The only simple lesson worth learning from a review of that event of a half century ago is that the collapse of a complex economy is a complex event, and just as there are no simple explanations, there are not likely to be any simple cures.□

OUTLOOK FOR THE TENNESSEE ECONOMY

by David M. Mandy and Matthew N. Murray

with Agriculture Sector Forecast by Burton English

Although in the short term, Tennessee will be buffeted by events at the national level, these events will be filtered through the state's own economic structure. In the long term, a slowdown in growth is anticipated in 1989-1990, but the decline is not expected to be severe enough to bring about negative rates of growth in GSP or GNP.

THE SHORT-TERM OUTLOOK

Uncertainty permeates the current short-term forecast for the Tennessee economy, since the effects of stock market volatility on the national economy are still unknown. Although Tennessee will be buffeted by events at the national level, these events will be filtered through Tennessee's own economic structure. Hence, the performance of the Tennessee economy over the next two years depends upon both national phenomena and the composition of the Tennessee economy. The composition of the Tennessee economy will not change substantially in the short run. However, the potentially large changes in national performance make forecasting for the Tennessee economy problematic.

Recent Economic History

Economic events in Tennessee and the nation have defied prediction in 1987. The first quarter was remarkably strong, particularly since some economic activity was probably transferred from 1987 into 1986 by tax reform, and the stock market rose to record levels before its plunge in October.

The U.S. budget and trade deficits continued to mount, despite a weakening dollar and efforts to reduce both deficits. Through all of this scenario, the economic expansion extended to 59 months, 14 months longer than the post-war average, with real gross national product

Generally, the Tennessee unemployment rate has performed well in 1987, dropping from 7.3 percent in January to 6.5 percent in October, seasonally adjusted. This is much lower than expected and may indicate that the structural and frictional forces that have pushed Tennessee's unemployment rate up are beginning to ease. However, monthly estimates are not always accurate.

growing at a 4.2 percent annual rate for the first three quarters of 1987.

Figures 1 through 4, which chronicle the expansion in Tennessee, plot Tennessee economic indicators over the current expansion and, for comparison purposes, the 1975-1979 expansion. With the exception of the unemployment rate, the data are indexed so that the beginning of each expansion is 100. Subsequent values are calculated by applying the growth rate of the series to the previous value. In this way, the two expansions can be directly compared. Figure 1 shows a longer sustained rise in real personal income over the current expansion than in the second half of the 1970s. This trend is forecast to continue, albeit at a slower pace. A slower growth rate in the current expansion is one potential explanation for the length of the expansion. Real personal income could grow at current rates through 1989 before registering the same percent increase as the 1975-1979 expansion.

Figures 2 through 4 show that nonagricultural employment growth since 1982.4 has been similar to the growth of the late 1970s, except for a slightly faster pace toward the end of the earlier expansion. A slowdown is expected for 1987, but employment is forecast to continue increasing in 1988 and 1989. Despite this similarity, the unemployment rate has remained above the rates of the 1970s throughout the 1982-1986 period.

Higher unemployment rates are resulting from several factors. Since the structure of the Tennessee economy is experiencing a movement away from manufacturing and toward services and trade, the result is structural unemployment, because the labor force may not possess the skills needed for new jobs. Net migration in Tennessee is positive, so that there may be a relatively large component of the labor force searching for jobs. Also, search time is less costly to unemployed workers due to more generous unemployment insurance benefits. All these factors result in an increase in the unemployment rate.

The pattern in the two expansions is similar, except that unemployment rates have decreased in 1986 and early 1987. The spread in unemployment rates between the two expansions will be less than 1 percentage point before unemployment rates begin to rise in 1988. In the 1980s persistent sluggishness in manufacturing employment has been linked with higher unemployment rates. Figure 4 shows that, after initial gains, manufacturing employment has remained flat during the current expansion, whereas in the 1975-1979 period, manufacturing employment continued increasing until the downturn in 1979.

Generally, the Tennessee unemployment rate has performed well in 1987, dropping from 7.3 percent in January to 6.5 percent in October, seasonally adjusted. This is much lower than expected and may indicate that the structural and frictional forces that have pushed Tennessee's unemployment rate up are beginning to ease. However, monthly estimates are not always accurate. Prudence dictates that we withhold judgement on potential secular decreases in the unemployment rate until mid-1988.

Current Developments

There are many changes occurring in the economy at the present time. Once the areas are identified, the potential impact of alternative outcomes on the short-term outlook can be evaluated.

Financial Markets. The short-term outlook is dominated by concerns about recent volatility in financial markets. Tennessee will share the national experience of slower growth in consumption and residential investment, resulting in slower growth in aggregate demand, which in turn implies slower growth for the Tennessee economy. Cyclically-sensitive sectors like construction and durable goods are

FIGURE 1
Tennessee Real Personal Income Indexes
(Recession Trough = 100.)

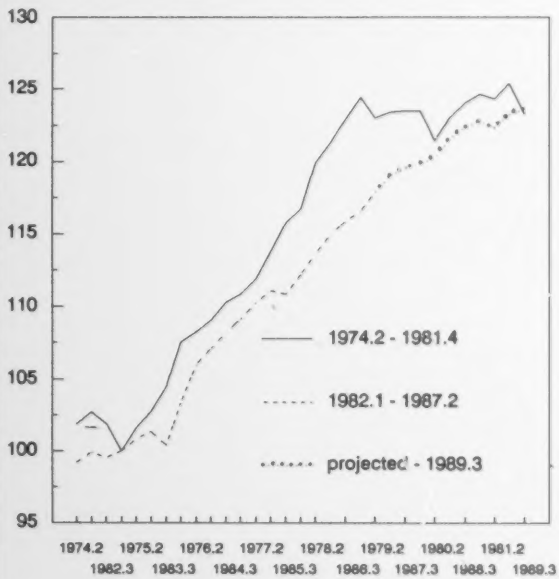


FIGURE 2
Tennessee Total Nonagricultural Employment Indexes
(Recession Trough = 100.)

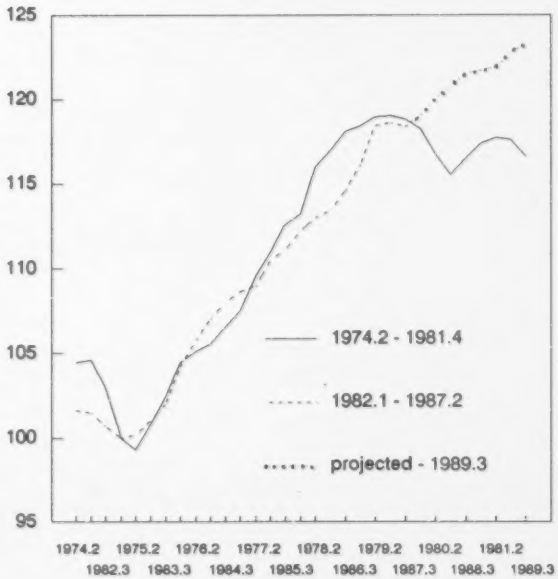


FIGURE 3
Tennessee Unemployment Rate
(Percent)

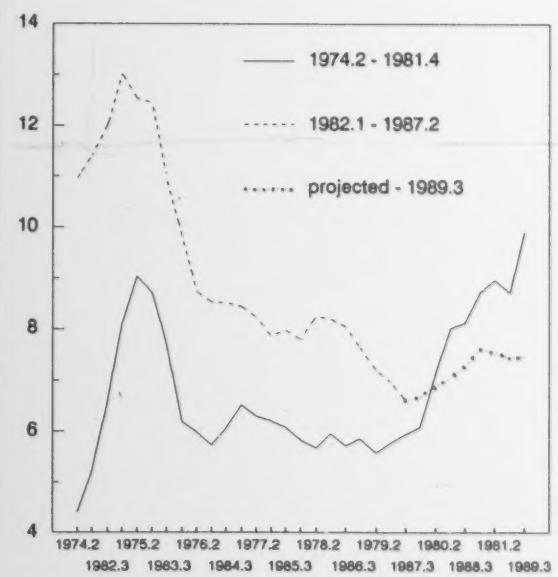
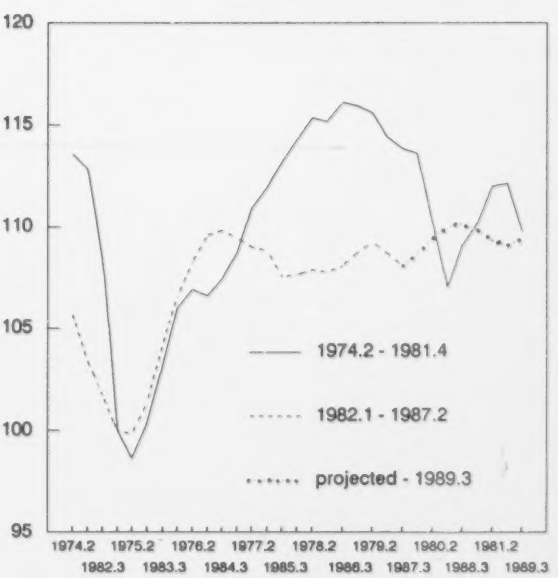
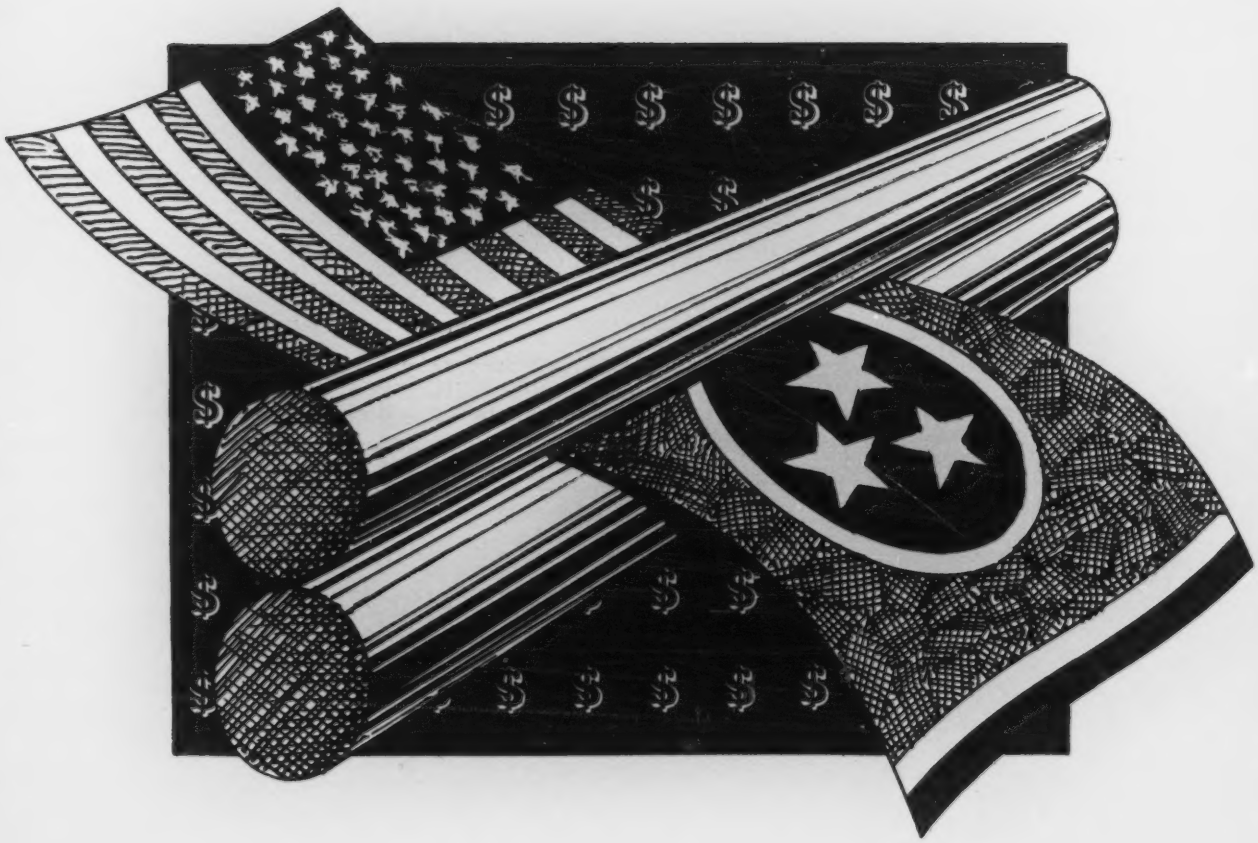


FIGURE 4
Tennessee Manufacturing Employment Indexes
(Recession Trough = 100.)





particularly vulnerable. However, interest rates are also expected to exhibit slower growth as a result of stock market losses, and more moderate interest rates should dampen the impact on final demand.

The possibility that consumers will retrench heavily in response to decreases in wealth and a loss of confidence is the single largest risk in the forecast scenario. Although the likelihood of a recession in Tennessee in 1988 is low, if aggregate demand falls dramatically in 1987.4 and 1988.1, a recession could occur. The real impact of financial market instability will not be known until the end of the first quarter of 1988. Early survey results indicate that consumer confidence declined in September and October. One major durable good category, automobile sales, declined 13 percent during the August-through-October sales period from 1986 to 1987. Automobile sales did not exhibit strong growth during the fall sales period from 1985 to 1986, despite popular perceptions. Thus, the decrease in 1987 yields autumn automobile sales in 1987 only slightly above sales in 1984. However, automobile sales did not decline in the last half of October, and sales of other durable goods have not declined significantly.

International Trade. The U.S. current account balance continued to fall in late 1986 and early 1987. However, there are indications that the U.S. trade deficit is

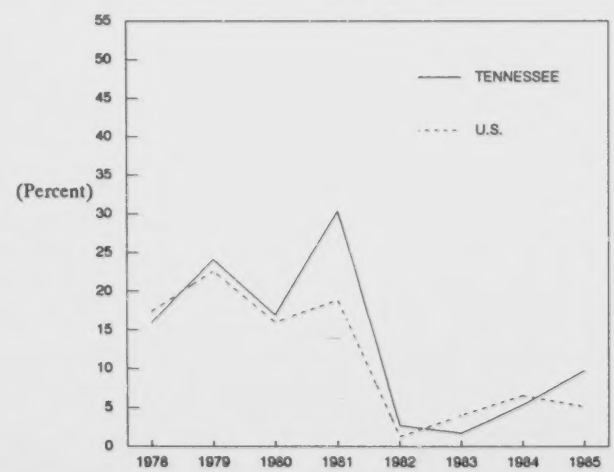
finally beginning to improve. The merchandise trade deficit declined in August and September, and recent decreases in the value of the dollar should reinforce this trend. The short-term outlook is for the current account balance to decline from the fourth quarter of 1987 through the third quarter of 1988.

This improvement should bolster the Tennessee economy somewhat as net export demand for Tennessee products increases. While relative export performance is difficult to measure at the state level, the available data suggest that Tennessee is more export-sensitive than most states. Hence, an improved current account balance will favor Tennessee. Improvements are already evident in several Tennessee manufacturing sectors. Apparel employment grew by 3.2 percent from October 1986 to October 1987, while furniture and fixtures employment grew 12.6 percent over this same time period. Employment in paper, leather, textiles, and rubber and plastics has also grown in 1987. Thus, an improving international trade sector appears to be initiating broad-based growth in Tennessee manufacturing. These improvements are related to relatively high foreign investment in Tennessee. A weak dollar which encourages foreign producers to invest domestically in order to avoid exchanging their products at unfavorable rates is a particularly positive development, because the investment improves the economic base, which provides employment and income in Tennessee over a long time period. Figure 5 shows that employment growth in firms that are foreign-owned has been higher in Tennessee than the U.S. in recent years.

Nevertheless, there are also dangers associated with a declining dollar, including a further erosion of confidence and the possibility of imported inflation. Imported inflation occurs when a weaker dollar causes price increases domestically. If inflation reignites, tighter monetary policies may follow. This would result in slower growth in Tennessee.

Fiscal Policy. One by-product of uncertainty in financial markets has been renewed efforts to decrease the federal budget deficit. Although the net effect of an agreement to reduce the deficit is unclear, it appears that confidence will improve in the financial community if the deficit is reduced. However, such a reduction would also have a contractionary effect on aggregate demand. As indicated above, the major risk in the short run is a large decrease in aggregate demand. If the confidence effect outweighs the direct contractionary effect of tighter fiscal policy, then Tennessee and the nation should benefit from an agreement; otherwise, deficit reduction may exacerbate the situation.

FIGURE 5
Growth in Tennessee and U.S. Employment of Nonbank U.S. Affiliates
1978-1985



It is also unclear what effect election-year politics will have on the deficit for fiscal 1988. The current sentiment seems to be toward deficit reduction. However, this could change if a recession appears imminent.

Finally, it is worth noting that tax reform is still affecting our economy. Increases in federal income tax withholding are expected late in 1987 as a result of the failure of some taxpayers to file new W-4 withholding certificates by the October 1 deadline. The magnitude of any implied decrease in disposable income is unknown at the present time. Also, as expected, some purchases were accelerated into 1986 by the elimination of the sales tax deduction. For example, despite comparable incentive programs, automobile sales were much lower in the fall of 1987 than in the fall of 1986. This was true even before the decline in the stock market. Since Tennessee relies heavily on sales taxes, the state should experience a relatively large drop in sales and sales tax receipts. This heavy reliance also means that any decreases in disposable income that result from elimination of the sales tax deduction will be exaggerated in Tennessee.

Short-Term Forecast

The short-term forecast for Tennessee summarized in Table 1 incorporates decreases in consumption caused by declines in wealth. Hence, growth is forecast to decrease in the fourth quarter of 1987. Still, 1987 will be a year of moderate growth in Tennessee due to strength earlier in the year. Lethargic aggregate demand will make 1988 the slowest year since 1983, though we feel that 1988 will not be a recession year. The major unknown factor for 1988 is the state of consumer confidence. Consumer spending has fueled the economic expansion over the last three years; thus, if consumer spending declines, slower growth must result. How much slower depends upon the magnitude of the drop in consumer spending. Thus, the outlook for 1988 will be much clearer after the true impact of recent events on consumption can be observed. The current forecast depicts a slight rebound in late 1988 as

TABLE 1
QUARTERLY TENNESSEE ECONOMETRIC MODEL
1987 SEPTEMBER QUARTERLY UPDATE
SELECTED U.S. AND TENNESSEE ECONOMIC INDICATORS
SEASONALLY ADJUSTED

	FORECAST - DATA										ANNUAL		
	1987Q1	1987Q2	1987Q3	1987Q4	1988Q1	1988Q2	1988Q3	1988Q4	1989Q1	1989Q2	1989Q3	1986	1987	1988
US GNP (BIL 82 $).....	3772.2	3795.3	3831.2	3844.4	3860.1	3875.5	3907.7	3938.9	3955.6	3973.7	3991.6	3713.3	3810.8	3895.5
% CHG PREV QTR SAAR.....	4.43	2.47	3.84	1.38	1.64	1.61	3.37	3.22	1.71	1.84	1.82	2.93	2.63	2.22
% CHG SAME QTR LAST YR.....	1.98	2.45	3.04	3.02	2.33	2.11	2.00	2.46	2.47	2.53	2.15	2.93	2.63	2.22
US PERS CON DEFL (1982=100)..	116.9	118.3	119.3	120.5	121.8	123.1	124.5	125.9	127.4	128.8	130.3	114.2	118.7	123.8
% CHG PREV QTR SAAR.....	6.03	4.88	3.42	3.95	4.42	4.60	4.77	4.59	4.66	4.53	4.71	2.21	3.95	4.29
% CHG SAME QTR LAST YR.....	2.90	4.14	4.19	4.57	4.17	4.05	4.38	4.54	4.60	4.64	4.62	2.21	3.95	4.29
TN PERSONAL INCOME (MIL $)...	59419	60711	61499	62245	63127	64517	65705	66686	67185	68469	69446	56773	60968	65009
% CHG PREV QTR SAAR.....	10.98	8.98	5.29	4.94	5.79	9.10	7.57	6.11	3.03	7.87	5.83	6.04	7.39	6.63
% CHG SAME QTR LAST YR.....	6.75	7.76	7.52	7.52	6.24	6.27	6.84	7.14	6.43	6.13	5.69	6.04	7.39	6.63
TN PERSONAL INCOME (MIL 82 $)	50829	51319	51550	51672	51842	52416	52763	52953	52746	53161	53302	49701	51343	52493
% CHG PREV QTR SAAR.....	4.67	3.92	1.81	0.95	1.32	4.51	2.67	1.45	-1.56	3.19	1.07	3.74	3.30	2.24
% CHG SAME QTR LAST YR.....	3.73	3.48	3.19	2.82	1.99	2.14	2.35	2.48	1.74	1.42	1.02	3.74	3.30	2.24
US PERSONAL INCOME (BIL 82 $)	3132.6	3154.9	3151.5	3169.7	3169.3	3181.3	3205.2	3223.4	3233.7	3240.2	3261.5	3096.8	3147.2	3194.8
% CHG PREV QTR SAAR.....	1.70	0.30	2.13	2.33	-0.04	1.52	3.04	2.29	1.28	0.81	2.66	3.93	1.72	1.51
% CHG SAME QTR LAST YR.....	2.75	0.98	1.54	1.61	1.17	1.48	1.71	1.69	2.03	1.85	1.76	3.93	1.72	1.51
TN NONAGRIC JOBS (THOUS).....	1998.3	2001.6	1997.2	2009.6	2025.1	2037.0	2051.4	2054.0	2057.0	2072.1	2080.9	1928.7	2001.7	2041.9
% CHG PREV QTR SAAR.....	8.04	0.68	-0.87	2.49	3.12	2.39	2.85	0.52	0.58	2.97	1.69	3.27	3.79	2.01
% CHG SAME QTR LAST YR.....	4.82	4.55	3.28	2.53	1.34	1.77	2.71	2.21	1.58	1.72	1.44	3.27	3.79	2.01
US NONAGRIC JOBS (MIL).....	101.1	101.7	101.3	102.5	102.8	103.1	103.6	104.2	104.5	104.7	104.9	99.6	101.9	103.4
% CHG PREV QTR SAAR.....	2.96	2.29	2.23	1.09	1.04	1.05	1.96	2.30	1.32	0.70	0.87	2.14	2.32	1.47
% CHG SAME QTR LAST YR.....	2.26	2.40	2.47	2.14	1.66	1.35	1.28	1.59	1.65	1.57	1.29	2.14	2.32	1.47
TN UNEMPLOYMENT RATE (%).....	7.2	7.0	6.6	6.7	6.9	7.1	7.3	7.6	7.6	7.5	7.5	8.0	6.9	7.2
US UNEMPLOYMENT RATE (%).....	6.7	6.2	6.0	6.0	6.1	6.2	6.1	6.0	6.0	6.2	6.3	7.0	6.2	6.1
BANK PRIME INTEREST RATE (%).	7.5	8.0	8.4	8.7	8.8	9.0	9.3	9.7	10.2	10.7	11.0	8.3	8.2	9.2
TN MFG JOBS (THOUS).....	496.8	496.4	491.6	496.5	497.8	500.5	501.1	499.6	497.3	496.2	498.0	491.8	494.3	499.8
% CHG PREV QTR SAAR.....	1.81	-1.90	-3.28	2.38	2.69	2.24	0.46	-1.23	-1.78	-0.93	1.45	-0.13	0.51	1.10
% CHG SAME QTR LAST YR.....	1.23	0.87	-0.02	-0.02	0.19	1.23	1.94	1.03	-0.09	-0.87	-0.63	-0.13	0.51	1.10
TN MFG AVE WEEKLY HOURS.....	41.8	41.0	41.0	41.0	41.1	41.2	41.1	41.1	40.5	40.4	40.3	41.2	41.2	41.1
% CHG PREV QTR SAAR.....	5.23	-7.23	-0.50	0.00	1.49	0.50	-0.96	0.00	-5.89	-0.29	-1.72	0.54	0.05	-0.18
% CHG SAME QTR LAST YR.....	1.78	-0.12	-0.73	-0.71	-1.61	0.38	0.27	0.26	-1.62	-1.81	-2.00	0.54	0.05	-0.18

SOURCE: QUARTERLY TENNESSEE ECONOMETRIC MODEL, CENTER FOR BUSINESS AND ECONOMIC RESEARCH, UT-KNOXVILLE.

the initial impact of the stock market decline dissipates.

The end of the short-term forecast horizon witnesses a further slowdown which could easily make 1989 a recession year. However, the outlook for 1989 depends largely on public and private decisions in 1988. If the monetary and fiscal authorities respond appropriately to events as they unfold, a recession within the next two years can probably be avoided. Even with perfect policy decisions, the response of consumers to recent events will set the tone for the next two years.

Employment. Total Tennessee nonagricultural employment will grow by 3.8 percent in 1987. This is a surprisingly strong growth rate for a mature expansion. It is important to recognize that most of this growth occurred in late 1986 and the first quarter of 1987. Seasonally adjusted nonagricultural employment grew by 4.8 percent between 1986.1 and 1987.1. In contrast, growth from 1987.1 to 1988.1 is forecast at 1.3 percent. Growth rates will exceed 2 percent by the end of 1988, but will drop to 1.6 percent for all of 1989. These growth rates represent continued above-average employment growth for Tennessee. U.S. nonagricultural jobs are forecast to grow by 2.3, 1.5, and 1.4 percent in 1987, 1988, and 1989, respectively.

Tennessee employment grew faster than the civilian labor force early in 1987. However, recent decreases in the Tennessee unemployment rate are largely attributable to declines in the number of unemployed persons. The result is a healthy drop in the unemployment rate from 8 percent in 1986 to 6.9 percent in 1987. In October, the unemployment rate fell to 0.4 percentage points below the 6.9 percent forecast for all of 1987. If the unemployment rate remains this low for the remainder of 1987, then the annual average for the year will be less than 6.9 percent. However, further declines are not anticipated. Labor-force growth will outstrip employment growth. Further decreases in the number of unemployed persons are not consistent with an economy in the late stages of an expansion. The unemployment rate should remain fairly steady from the end of 1988 through 1989, but a downturn would undoubtedly increase unemployment above the 7.4 percent forecast for 1989. In addition, increases in the number of unemployed persons above the forecast levels are possible, given the recent behavior of this statistic. In this event, the unemployment rate will rise above the forecast levels.

The U.S. unemployment rate is forecast to remain slightly above 6 percent throughout the next two years. This means that the Tennessee unemployment rate will remain above the U.S. rate during this time. A fundamental change in the relationship between Tennessee and the U.S. has occurred during the current expansion. Historically, the Tennessee unemployment rate falls below the U.S. unemployment rate during the growth phase of the business cycle., but Tennessee has experienced unemployment rates higher than the U.S. average since 1980. In this respect, the Tennessee

There are three risks in the current inflation forecast. First, oil prices could increase at any time, given the instability in the oil-producing regions of the world. Second, the falling dollar could increase inflation as imported goods become more expensive. Third, Federal Reserve reaction to the stock market could increase inflation if the Federal Reserve feels that loose monetary policies are necessary to maintain liquidity in the financial markets.

unemployment rate has never recovered from the 1980 recession. The reasons for higher structural and frictional unemployment were discussed above. However, the fact that the Tennessee unemployment rate was only 0.1 percentage points above the U.S. rate in October may signal a return to historical norms.

Certain sectors of the Tennessee economy which are experiencing secular growth will be insulated from the slow growth anticipated for the overall economy. Figure 6 illustrates employment growth rates for the largest sectors of the Tennessee economy. Trade and services will continue to outstrip the statewide average, exhibiting employment growth of 3.6 and 3.8 percent, respectively, in 1988. Construction will perform well overall in 1987, but all of the growth will be in the first quarter of the year. Construction employment will decline over 2 percent in 1988 and remain flat in 1989. Employment in construction is highly sensitive to interest rates, so lower interest rates could increase construction employment above the forecast levels. In 1987, Tennessee will recover from two years of slow employment growth in the federal government sector, but the recovery will be short-lived, as federal civilian employment is forecast to remain flat in 1988 and 1989.

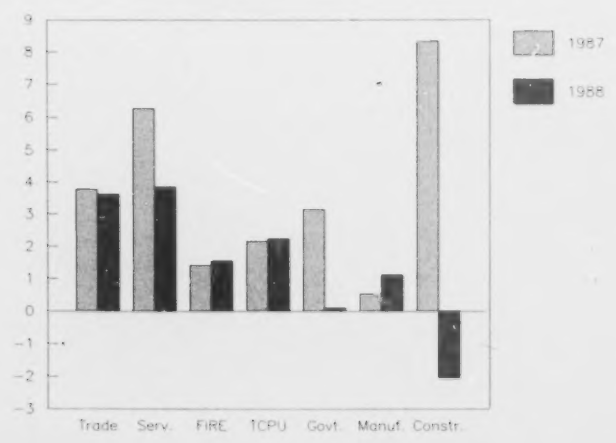
Manufacturing employment will grow more slowly than it has over the past year, with durables growing faster than nondurables. Durable goods employment will grow by less than 1 percent annually over the three-year period 1987-1989. Nondurable goods employment, which fell in 1985 and 1986, is forecast to fall 0.2 percent annually from 1987 through 1989. Certain manufacturing sectors will perform well, however. Among the durables, lumber and wood, furniture and fixtures, and transportation equipment will continue to exhibit positive employment growth. Transportation equipment should increase rapidly at the end of 1989 as Saturn comes on line. The only nondurable sector forecast to display notable positive growth is rubber and plastics.

Relative to the state, other sectors will exhibit slower growth than they have over the expansion. Finance, insurance, and real estate (FIRE) employment grew by a dismal 2.2 percent from 1986.1 to 1987.1, exhibiting the lowest growth rate for FIRE employment since 1983.2. Overall, FIRE employment will grow by less than 2 percent annually over the 1987-1989 forecast horizon. Transportation, communications, and public utilities (TCPU) employment is also forecast to grow more slowly over the next two years. Growth should average about 2.3 percent in 1988 and 1989. Both of these sectors will experience higher growth rates toward the end of 1988 as consumption growth rises above the 2 percent level.

Inflation. A continuation of moderate inflation is expected for 1988 and 1989. The U.S. personal consumption deflator should increase by 4.3 and 4.6 percent, respectively, in these years. This follows an inflation rate of 4 percent for 1987. All of these rates represent an increase over the 1984-1986 period, but are still below average for the past ten years. Of course, much of the inflation of the 1970s and early 1980s was caused by oil price increases, and this effect reversed in 1986 as oil prices fell. The 4 percent inflation rate of 1987 may be viewed as a more normal long-run average, since 1987 has been relatively free of exogenous price shocks.

There are three risks in the current inflation forecast. First, oil prices could increase at any time, given the instability in the oil-producing regions of the world. The current outlook assumes that this does not happen, and higher oil prices would materially alter the inflation forecast. Second, the falling dollar could increase inflation as imported goods become more expensive. Third, Federal Reserve reaction to the stock market could increase inflation if the Federal Reserve feels that loose monetary policies are necessary to maintain liquidity in the financial markets. The stock market crash is

FIGURE 6
Tennessee Nonagricultural Job Growth
1987 and 1988



currently expected to decrease the inflation rate because aggregate demand will be lower. This effect should outweigh the effects of any potential easing of monetary policy. Alternatively, the Federal Reserve may react to import price increases with tighter monetary policies. This would work in concert with lower aggregate demand to dampen inflation but would result in slower growth.

Gross state product. Growth in real gross state product is forecast to decline in the near future. In 1985 and 1986, growth was 3.6 and 4.3 percent, respectively. Gross state product will increase by another 4 percent in 1987 before dropping off to 2.8 and 2.3 percent growth, respectively, in 1988 and 1989. This behavior reflects the general slowing anticipated for the near term, but it still represents relatively healthy growth for Tennessee.

Personal Income

For the fourth consecutive year, real personal income in Tennessee will continue to grow by more than 3 percent for 1987, exceeding the U.S. growth rate by about 1.5 percentage points. Income growth is forecast to decline throughout 1987 and into 1988. As the economy recovers from the shocks of late 1987, real income growth should accelerate slightly in late 1988 before dropping off again in 1989. Overall, real income growth will be 2.2 percent in 1988, with real personal income in Tennessee increasing by only 1.4 percent in 1989.

Nominal income growth in Tennessee will not change appreciably from the growth rates of the past several years. Declining real income growth will combine with constant or marginally higher inflation to produce nominal growth of 7.4, 6.6, and 6.0 percent in 1987, 1988, and 1989. This compares with nominal growth of 6.8 and 6.0 percent in 1985 and 1986. Nationally, nominal growth rates for personal income will be 5.7, 5.9, and 6.5 percent for the three forecast years.

Personal income growth is diversified across a number of income categories. Wages and salaries, the largest component of personal income, will grow faster than fringe benefits and nonlabor income in 1987 and 1988. Proprietors' income varies widely from year to year. After a strong showing in 1987, nominal growth in proprietors' income will decrease to 4.4 percent in 1988 and rebound only slightly, to 6.0 percent in 1989. Rent, interest, and dividends which were stagnant in 1986 will grow by only 3.9 percent nominally in 1987. Transfer payments will increase significantly in 1988 as sluggish aggregate economic growth causes more individuals to receive payments from the government.

Sales. Commensurate with generally slower growth in the rest of the Tennessee economy, sales will grow slowly over the short-term forecast horizon. The average annual compound growth rate in nominal sales will be 6.2 percent from 1987 through 1989. This same growth rate was 11.3 percent over the previous three years. The forecast is a continuation of a trend. Surprisingly, real sales for 1987 are forecast to grow by only 1.7 percent, which is 1.6 percentage points below real income growth. This reflects the advance purchase of automobiles in 1986 due to dealer incentives and the deductibility of the sales tax. Sales growth could decline more dramatically if consumers reduce spending more than expected.

Agriculture. Actions taken to reduce the federal budget deficit and the declining value of the dollar offer conflicting news to the agricultural sector. As the dollar declines abroad, foreign consumers will increase their purchases of our agricultural commodities. However, other countries' reactions to the increased competitive stance of the U.S. will dampen the effect. Exports will not attain pre-1985 levels this year or next. An increase in foreign demand should result in slight increases in major agricultural crop commodity prices. On the other hand, budget cuts in farm programs by the Administration and Congress will decrease farm income.

Many elements of the farm sector will experience continued stress, particularly financial stress of agricultural firms because of relatively low prices and depressed values of agricultural assets. Further changes in the value of these assets--most notably, land--will depend in part on federal government actions. If farm programs

are maintained, land values should stabilize. However, if the federal government decides to reduce support of the agricultural sector, land values will decline and additional farms will face financial stress.

Major Crop Commodities. In recent years, Tennessee's cotton acreage has remained relatively stable (400,000 acres). However, this will change in 1988, since allotment for next year has been cut in half, to 12.5 percent. Exports are increasing, with mill use at levels similar to those reported in the early 1970s. The present popularity of cotton indicates that consumer demand for cotton products will remain high. Although this past year cotton farmers had good prices and weather, with yields around 730 pounds per acre statewide and some farms averaging yields of two bales or more, in all likelihood these conditions will not prevail next year, and cotton farmers' income will decline.

Both the present situation and the outlook for tobacco seem to be more stable now. Export demands are increasing as markets to China have opened, but domestic demand will continue to decrease.

Although soybean acreage increased dramatically during the '70s, the situation is now in reverse. As South America's production has increased, it has become more difficult for the American Southeast to compete. Barring weather problems in the large soybean-producing areas, prices should be in the $5 range. Acres planted to soybeans will decrease to 1.1 million as a shift toward cotton acreages prevails.

Increased participation in the Conservation Reserve Program will occur this year as bids are taken at levels similar to those of past years. There will probably not be a corn base buyout this year, however.

Another provision of the 1985 farm bill is the conservation compliance provision, requiring farmers to follow a conservation plan if they are to benefit from other federal commodity programs. As the time frame closes in on the 1990 initiation date, the government needs to educate states as to its benefits if states are to continue to produce agricultural commodities. With increased pressure on Extension Services, the Soil Conservation Service, and the Agricultural Stabilization Conservation Service to expand their roles, increased funding will be needed.

Major Livestock Commodities. Pork-producing firms have done fairly well in the recent past, expanding because of cheap feed and relatively high commodity prices. The feeder pig industry produced almost 550,000 pigs this year, a 6 percent increase over the previous year. Now that these pigs are finding their way to market, prices have decreased $20 per hundred weight. There will be a 10 percent increase in slaughtered hogs this year, with expansion occurring in firms already producing hogs. The price per hundred weight should range between $37 and $43.

Beef numbers continue to decline. Between January 1986 and June 1987, Tennessee numbers decreased by 100,000 head. By June 1988, the number of head will decrease again, although reports out of Missouri indicate that this trend of herd reduction should slow or perhaps reverse itself. Prices for choice steers should stay in the $60 range next year. However, if prices are at the lower end, feeder cattle prices will be weak.

The poultry industry has undergone rapid expansion during this decade, and large supplies will probably result in decreased prices. Consequently, consumers will increase their demand for poultry in response to the decrease in price. Marginal areas and areas most distant from processing plants will have problems surviving.

Although the dairy termination program succeeded in reducing milk production, it is likely to increase during the next term. Then, as reduction goals are exceeded, decreases in the government price support may result. Recent reports indicate that the Southeast is now a net milk importer from other regions and will remain so next year.

THE LONG-TERM OUTLOOK

In spite of the recurrent trade and budget deficits and the recent crisis in the stock market, the long-run forecast remains quite favorable. Growth in both the state economy and the national economy is projected for the entire outlook period, 1987-1996. Although a slowdown in growth is anticipated in 1989-1990, the decline is not expected to be severe enough to bring about negative rates of growth for either gross state product or gross national product. However, it should be emphasized that the economy faces a number of risks which, if realized, have the potential to precipitate a more severe downturn. This set of risk factors includes a crisis in the Persian Gulf, retrenchment of consumer demand, major loan defaults by Third World debtor nations, and the direct and indirect effects of the trade deficit and the budget deficit. Since it is impossible to anticipate the occurrence of such external shocks, it is impossible to incorporate them into the long-run forecast. It is recognized that one (or possibly more) recession(s) will likely occur over the course of the decade, but there is no data or other information which would point to specific times.

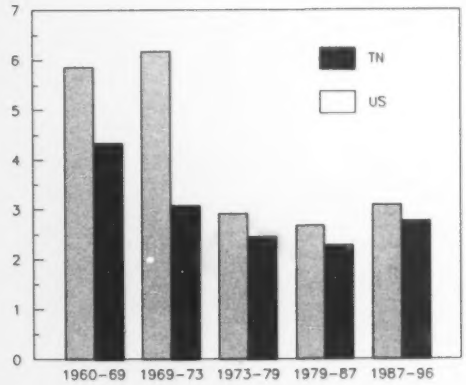
Historical Review

State Trends And National Trends

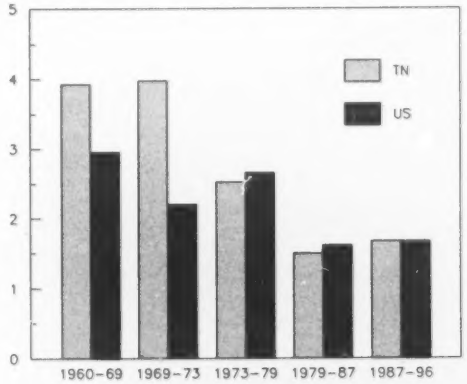
A comparison of the performance of the state economy relative to the national economy can be made by looking at the behavior of key economic aggregates over specific reference periods. To avoid confounding cyclical (short-run) trends with long-run trends, the reference periods chosen for comparison are the four most recent business cycles, peak to peak. The final reference period is from beginning to end of the long-run forecast period. In Figure 7, the compound annual growth rates for five such aggregates are presented for both the state economy and the national economy: real nonagricultural output, nonagricultural employment, inflation (implicit price deflator), real per capita personal income, and nonagricultural labor productivity. In addition, in the last panel of Figure 7, the average rates of unemployment are also presented for the same time periods.

A most striking feature of the figure is the slowdown in the growth of real

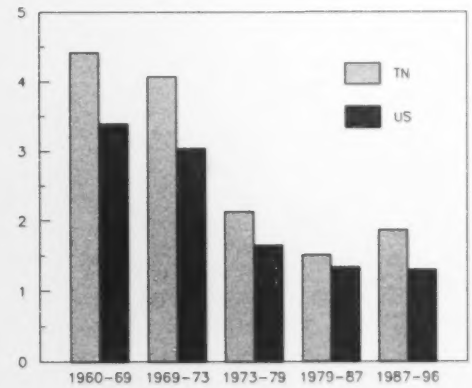
FIGURE 7
The Behavior of Economic Aggregates over the Business Cycle and the Forecast Period
Tennessee and U.S.
(Compound Annual Growth Rates)



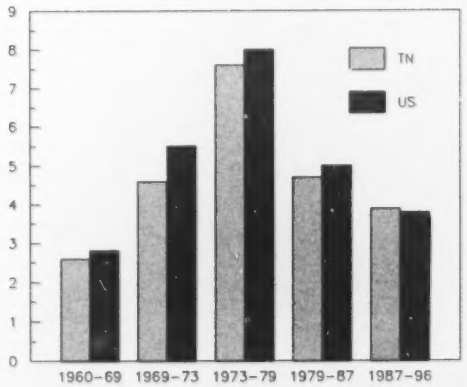
Real Nonagricultural Output



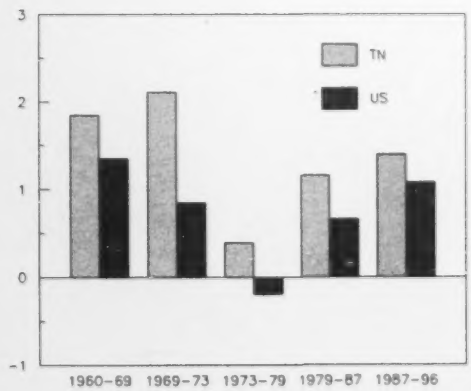
Nonagricultural Jobs



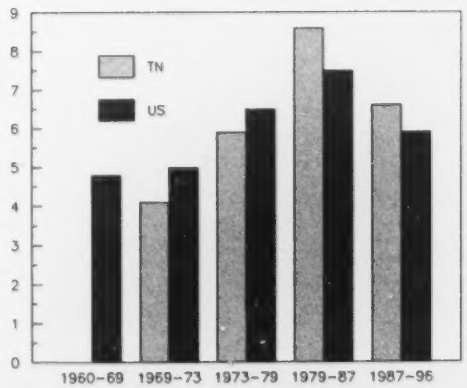
Real Per Capita Personal Income



Inflation



Nonagricultural Productivity



Average Unemployment Rate

output (gross state product and gross national product) and employment relative to the 1960-1973 period. However, it could be argued that the rates of growth, at least over 1960 to 1969, were an aberration for two reasons. First, this was a very long period of uninterrupted growth. Second, the economy's behavior reflects a dramatic demand lead stimulus brought about by increased defense spending (the war in Vietnam), increased nondefense spending (the expansion of social welfare programs) and significant federal tax reductions in 1962 and 1964. This demand-lead stimulus, in conjunction with demographic factors (e.g., the entrance of the Baby Boom generation into the labor market and increased labor force participation rates of females), provided the impetus for rapid employment growth.

The subsequent decline in output growth was precipitated by a number of factors, including a relative increase in the share of economic activity in the services and government sectors, where productivity levels and advances tend to be low. (In fact, for the national economy in general, productivity growth was negative in the 1973-1979 period.) In addition, both fiscal and monetary policy became contractionary in the late 1960s, largely in an attempt to curb inflation. The intentional contractionary policies and a variety of attendant circumstances (e.g., reduced defense spending) did have the effect of inducing significant declines in the growth rates of output and employment. Employment growth rates have continued to decline as a result of lower output (and thus labor demand) growth, and a declining Baby Boom population (labor supply growth).

Unfortunately, in spite of the slowdown in economic activity, inflation rates were volatile, and inflation continued to increase rapidly. Three contributing factors included inflationary expectations, rapid money supply growth, and external price shocks (e.g., the Arab oil embargo).

Also apparent from Figure 7 is the rather dramatic increase in the average rate of unemployment over the more recent business cycles, which reflects significant increases in the levels of both structural unemployment (i.e., those who lose their jobs due to changes in production techniques, or changes in consumer demand for products); and frictional unemployment (i.e., those searching for employment or simply between jobs), for both Tennessee and the U.S. The higher levels of frictional unemployment have resulted from the increased labor force participation of teenagers and women, two groups that tend to experience more intermittent work careers. The higher rates of structural unemployment have resulted from changing technology (capital substitution), import competition, and changes in consumer tastes (and thus changes in product demand). Due to the state's larger share of activity devoted to manufacturing (32.5 percent of gross state product in 1979) relative to the national economy (21.8 percent of gross national product in 1979), the state's level of structural unemployment has exceeded that of the national economy.

The declines in the growth of real per capita personal income are equally dramatic. However, it should be recognized that growth rates in the 1960s were very high, with wage increases often exceeding advances in productivity. The decline in growth was brought about largely by increased social security taxes, wage and price controls in the early 1970s, and nominal wage gains which were offset by high rates of inflation. The long-run forecast projects significant growth rates in real personal income over the 1987-1996 period.

Sectoral Trends

The aggregate performance of the state economy and the national economy is merely a reflection of the performance of the various sectors and subsectors of the economy. An understanding of the sectoral trends is essential to an understanding of the overall behavior of the economy, both historically and for the forecast period.

Sectoral Growth of Output. In Table 2, compound annual growth rates of real output for both the state economy and the national economy are presented. With few exceptions (e.g., services and finance, insurance and real estate from

TABLE 2

COMPOUND ANNUAL GROWTH RATES OF REAL OUTPUT BY SECTOR FOR TENNESSEE AND THE U.S. OVER THE BUSINESS CYCLE AND FORECAST PERIOD

	Business Cycle Peak to Peak				
	1960-1969	1969-1973	1973-1979	1979-1987	1987-1996
Overall Growth					
Tennessee	5.57	6.03	2.88	2.72	3.05
United States	4.26	3.16	2.55	2.24	2.77
Sectoral Growth					
Manufacturing					
Tennessee	8.80	8.18	2.51	3.02	2.97
United States	5.25	3.73	1.94	2.35	3.10
Durables					
Tennessee	9.74	7.97	2.28	4.85	3.33
United States	5.73	3.07	1.96	2.90	3.14
Nondurables					
Tennessee	8.05	8.36	2.71	1.32	2.58
United States	4.50	4.79	1.90	1.46	3.03
Mining					
Tennessee	3.88	5.19	-1.48	-0.08	-0.47
United States	3.55	0.86	-0.43	-1.33	-1.45
Construction					
Tennessee	2.96	0.39	0.25	0.68	2.08
United States	1.32	-1.85	0.31	0.18	1.04
FIRE*					
Tennessee	4.43	6.77	3.20	1.93	2.88
United States	4.77	4.02	3.77	2.62	2.64
Trade					
Tennessee	5.28	6.97	2.99	3.55	3.36
United States	4.41	4.84	2.67	3.16	3.24
TCPU**					
Tennessee	5.48	7.20	4.73	2.40	4.32
United States	5.11	4.96	3.19	1.86	2.95
Government					
Tennessee	5.38	2.64	3.66	0.68	1.60
United States	3.94	0.24	1.53	1.32	1.96
Agriculture					
Tennessee	-2.02	-0.58	1.04	5.45	1.18
United States	n.a.	n.a.	n.a.	n.a.	n.a.
Services					
Tennessee	4.60	5.82	3.75	4.32	4.08
United States	4.71	4.28	3.97	3.73	3.09

Source: Annual Tennessee Econometric Model, Historical Data and November 1987 Control Solution.

*Finance, insurance, real estate

**Transportation, communications, and public utilities

1960 to 1969), the state has performed better than the national economy through the 1960s and 1970s. However, as one moves closer to the present, a number of sectors--including finance, insurance and real estate (FIRE), mining, government and nondurables--have experienced periods of lower growth than their national counterparts. The mining sector in Tennessee has been particularly disadvantaged, experiencing larger declines in output relative to the mining sector of the national economy during the 1973-1979 period. Current expansion growth in output is still negative and is projected to remain so over the forecast period.

The overall growth of the state economy has historically been influenced heavily by the manufacturing sector, including both durable and nondurable industries. Employment growth in these sectors--which has only recently begun to increase--is projected to increase slightly over the forecast period. However, output growth has been and will remain more significant in both sectors. In spite of the declining employment growth rates, the share of total state activity comprised of manufacturing has risen from 23.4 percent in 1960, to 32.5 percent in 1979, and to 33.3 percent in 1987.

More recently (since 1979), growth of output in Tennessee's nondurables manufacturing sector has been quite stagnant (and was actually negative between 1984 and 1986), reflecting significant inroads by foreign competition. The subsector which has suffered most is chemicals, with 1987 output still below 1979 levels. Apparel has not performed much better, with total output surpassing 1979 levels only within the last year. Although some improvement is expected (largely as a result of the fall in the value of the dollar), growth will lag behind nondurables output growth for the U.S.

Sectors which have led the state in growth during the current business cycle are agriculture, trade, durable goods manufacturing and services. In durable manufacturing, the output levels of all subsectors now exceed 1979 levels, although the 1986 output of fabricated metals was still below its 1979 level. The most significant growth has taken place in nonelectrical machinery, where output has increased at an annual compound rate of 11.4 percent since 1979.

Throughout the business cycles considered, construction, mining and agriculture have acted as a drag on the growth of output for the state economy. During the forecast period, output growth will be dominated by durable goods manufacturing, trade and services. Mining and construction will still

TABLE 3

COMPOUND ANNUAL GROWTH RATES OF NONAGRICULTURAL JOBS BY SECTOR FOR TENNESSEE AND THE U.S. OVER THE BUSINESS CYCLE AND FORECAST PERIOD

	Business Cycle Peak to Peak				
	1960-1969	1969-1973	1973-1979	1979-1987	1987-1996
Overall Growth					
Tennessee	3.93	3.98	2.52	1.50	1.67
United States	2.95	2.20	2.65	1.55	1.22
Sectoral Growth					
Manufacturing					
Tennessee	4.52	2.58	0.17	-0.74	0.66
United States	2.05	-0.02	0.72	-1.28	0.42
Durables					
Tennessee	6.13	4.17	0.67	0.03	0.87
United States	2.56	-0.50	1.21	-1.48	0.26
Nondurables					
Tennessee	3.50	1.40	-0.24	-1.43	0.45
United States	1.34	-0.02	0.03	-0.91	0.09
Mining					
Tennessee	-0.83	0.15	6.94	-4.59	0.47
United States	-1.54	0.92	6.90	-1.07	1.76
Construction					
Tennessee	3.98	5.73	0.59	1.11	1.62
United States	2.25	3.47	1.44	1.42	1.00
FIRE*					
Tennessee	3.91	4.56	2.69	2.58	2.09
United States	3.27	3.60	3.50	3.29	2.18
Trade					
Tennessee	3.08	5.29	3.73	2.57	2.36
United States	2.88	3.09	3.31	2.30	1.87
TCPU**					
Tennessee	1.96	2.34	3.18	1.55	0.92
United States	1.16	1.18	1.65	0.81	0.20
Government					
Tennessee	4.32	3.55	4.13	0.39	0.47
United States	4.29	3.01	2.52	0.86	0.58
Services					
Tennessee	4.29	6.03	4.28	4.59	2.96
United States	4.71	3.58	4.88	4.07	2.36

Source: Annual Tennessee Econometric Model, Historical Data and November 1987 Control Solution.

*Finance, insurance, real estate

**Transportation, communications, public utilities

impose a drag on the overall growth of state output.

Sectoral Growth of Employment. As with output growth, Tennessee's rate of employment growth exceeded that of the U.S. through 1973, as evidenced by Table 3. The state's superior performance over this period was largely attributable to rapid growth in durable goods manufacturing, construction and services employment. However, since 1973, the national economy has performed better in the aggregate and in terms of most individual sectors.

Employment growth has declined significantly over time in both the U.S. and Tennessee, although it remains respectable. Three factors have contributed to this decline. First are the demographic factors indicated above, which have caused labor force growth to slow. Second is increased capital intensity (as evidenced by declining employment and increasing output in manufacturing). And third are structural changes brought about by import competition and changes in consumer tastes for specific products. The latter factor has been particularly important in Tennessee, causing employment growth to slow relative to the U.S.

State-specific employment growth for the longer period of 1960 to 1979 benefited from the rapid growth in the durable goods manufacturing, trade, FIRE and government sectors, and services.

During the most recent cycle, employment growth has remained significant, being dominated by services. Several sectors, including manufacturing, mining and construction, have all experienced negative rates of employment growth. The most severely disadvantaged durable goods manufacturing subsectors have been primary metals and electrical machinery. In the nondurable goods manufacturing sector, chemicals and "other" nondurables have experienced precipitous declines in employment growth amounting to -5.7 and -7.6 percent, respectively, between 1979 and 1986. The only manufacturing subsectors which have realized positive rates of employment growth are furniture and fixtures, fabricated metals, transportation equipment, "other" durables, and printing and publishing.

During the forecast period, service employment growth will remain dominant, and only the mining sector is expected to realize declining rates of employment growth. Manufacturing employment growth will remain small but positive, exceeding the rate of growth of manufacturing employment for the national economy. This latter phenomenon is a reflection of Tennessee's close linkage with the international sector. The fall in the value of the dollar will allow the state to exploit this linkage in terms of increased exports and the substitution of

TABLE 4

COMPOUND ANNUAL GROWTH RATES OF REAL AVERAGE WAGES AND SALARIES BY SECTOR FOR TENNESSEE OVER THE BUSINESS CYCLE AND FORECAST PERIOD

	Business Cycle Peak to Peak				
	1960-1969	1969-1973	1973-1979	1979-1987	1987-1996
Overall Growth					
All sectors	n.a.	0.28	0.15	0.58	1.31
Non-agricultural sectors	n.a.	0.27	0.17	0.46	1.30
Sectoral Growth					
Manufacturing	1.84	0.88	0.95	0.98	1.47
Durables	1.72	0.83	1.10	1.64	1.51
Nondurables	1.90	0.91	0.82	0.27	1.39
Mining	2.57	4.50	1.74	-1.21	1.13
Construction	3.57	-0.08	0.26	0.18	0.93
FIRE*	2.44	1.91	0.04	2.12	1.19
Trade	2.52	0.48	-0.66	-0.29	1.24
TCPU**	1.44	4.00	0.54	0.13	1.56
Government	2.43	2.79	-0.35	0.69	1.27
Agriculture	n.a.	1.74	-1.32	2.23	1.66
Services	1.99	-0.01	0.08	1.37	1.71

Source: Annual Tennessee Econometric Model, Historical Data and November 1987 Control Solution.
*Finance, insurance, real estate
**Transportation, communications, public utilities

domestically-produced goods for imported goods (import substitution).

Sectoral Behavior of Wages and Salaries. The discussion above indicates a significant divergence in sectoral performance, both in terms of output and employment growth. There are similarly divergent trends in the pattern of wage and salary growth across sectors of the state economy. In Table 4, the compound annual growth rates of real average wages and salaries in Tennessee are presented, by sector, for the four most recent business cycles and the forecast period.

Wage and salary growth has historically been dominated by mining (in spite of declining output and employment), transportation, communications, and public utilities (TCPU), manufacturing and agriculture. Several sectors exhibit erratic compensation growth patterns, particularly FIRE, trade, construction and government, where compensation growth has at times been negative. This indicates that nominal wage gains have not always been sufficient to compensate for inflation.

Compensation patterns in manufacturing have also shown a divergence across the durable and nondurable goods manufacturing sectors. In all major subsectors that comprise durable goods manufacturing, wage and salary growth rates have been positive between 1979 and 1986. The most rapid rates of growth were in the transportation equipment, electrical machinery and fabricated metals subsectors. Nonelectrical machinery realized the poorest wage and salary gains, with growth rates near zero.

Compensation growth in nondurables has not fared so well. In fact, negative growth rates can be observed for apparel, rubber and plastics, and "other" nondurables over the 1979-1986 period. On the other hand, paper, printing and publishing, and chemicals all realized compound annual growth rates in compensation in excess of 1 percent over this same period.

In the current business cycle, wage and salary growth in total has been nearly three times that of the previous business cycle. Projected rates of growth for 1987-1996 will approach the high rates of growth of the 1960s.

General Long-Run Overview

In the previous discussion on the historical performance of the state and national economies, only limited reference was made to projected trends in key indicators over the 1987-1996 outlook period (see Figure 7). In Table 5, forecast estimates are presented for a variety of aggregate indicators, specific to the individual years of the long-run forecast.

By all measures, both the state economy and the national economy will perform quite well between 1987 and 1996. The compound annual growth rates of real output (gross state product) will be significant, with the state rate of 3.05 percent exceeding the rate of growth of output for the national economy, 2.77 percent. These growth rates are a noticeable improvement over post-1973 output growth rates. The slight downturn in economic activity projected for 1988-1989 will have only a minimal impact on output growth rates, with the slowest period of state output growth occurring in 1989 (2.28 percent). By 1991, output growth will rebound as the economy begins to utilize its resources more fully.

The growth in output between 1987 and 1996 will result from both labor force growth (1.67 percent) and productivity (output per employee) growth (1.37 percent). State productivity advances over 1987-1996 will be led by TCPU, with a compound annual growth rate of 3.4 percent. Productivity growth in the manufacturing sector will also be substantial, amounting to 2.3 percent for the state and 3.5 percent for the U.S. between 1987 and 1996. Lower state-specific growth is in part due to the low productivity growth in fabricated metals, printing and publishing, and rubber and plastics. While significant, these gains fall short of the growth rates in manufacturing produc-

TABLE 5
ANNUAL TENNESSEE ECONOMETRIC MODEL
CONTROL SOLUTION: NOVEMBER 1987
TENNESSEE SELECTED INDICATORS

	FORECAST-DATA									
	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
TN GROSS STATE PRODUCT (MIL. DOL.)...	82387.	88064.	94549.	101248.	108477.	115572.	123391.	132358.	141577.	152383.
PERCENTAGE CHANGE.....	9.58	6.89	7.36	7.08	7.14	6.54	6.77	7.27	6.96	7.63
TN GROSS STATE PRODUCT (MIL 82 $)....	71065.0	73077.3	74746.8	76628.7	79498.9	82288..	85147.6	88023.2	90377.6	93148.6
PERCENTAGE CHANGE.....	4.08	2.83	2.28	2.52	3.75	3.51	3.47	3.38	2.67	3.06
US GROSS NATIONAL PRODUCT (BIL 82 $).	3810.8	3895.6	3980.6	4045.8	4207.8	4329.3	4473.1	4600.5	4736.5	4871.1
PERCENTAGE CHANGE.....	2.62	2.23	2.18	1.64	4.01	2.89	3.32	2.85	2.96	2.84
TN PERSONAL INCOME (MIL. DOL.).....	60968.	65009.	68948.	73802.	79286.	84870.	90938.	97818.	105315.	112978.
PERCENTAGE CHANGE.....	7.39	6.63	6.06	7.04	7.43	7.04	7.15	7.57	7.66	7.28
TN PERSONAL INCOME (MIL 82 $).....	51346.1	52998.5	53214.7	54421.8	56396.7	58367.3	60257.4	62130.5	63949.7	65675.5
PERCENTAGE CHANGE.....	3.33	2.24	1.36	2.27	3.63	3.49	3.24	3.11	2.93	2.70
US PERSONAL INCOME (BIL 82 $).....	3147.3	3195.1	3253.2	3302.4	3411.2	3487.6	3589.6	3663.2	3750.2	3849.5
PERCENTAGE CHANGE.....	1.74	1.52	1.82	1.51	3.30	2.24	2.93	2.05	2.37	2.65
TN EMPLOYED PERSONS (THOUS).....	2168.0	2180.0	2200.0	2233.0	2275.4	2316.4	2348.8	2388.7	2422.2	2467.2
PERCENTAGE CHANGE.....	2.46	0.55	0.92	1.50	1.90	1.80	1.40	1.70	1.40	1.86
US EMPLOYED PERSONS (MIL).....	112.4	114.1	115.7	116.3	119.1	120.8	122.8	124.6	126.1	127.7
PERCENTAGE CHANGE.....	2.52	1.54	1.38	0.54	2.39	1.49	1.61	1.47	1.24	1.24
TN UNEMPLOYMENT RATE.....	6.9	7.2	7.5	7.3	7.0	6.6	6.3	5.9	5.7	5.4
US UNEMPLOYMENT RATE.....	6.2	6.1	6.2	7.0	6.3	6.1	5.7	5.4	5.3	5.1
IMPLICIT DEFLATOR, GSP.....	115.9	120.5	126.5	132.1	136.5	140.4	144.9	150.4	156.6	163.6
PERCENTAGE CHANGE.....	5.29	3.95	4.97	4.45	3.28	2.93	3.18	3.76	4.18	4.48
IMPLICIT DEFLATOR, GNP.....	117.4	121.4	126.1	131.8	136.1	140.2	144.7	150.3	156.9	164.2
PERCENTAGE CHANGE.....	2.88	3.44	3.88	4.51	3.22	3.04	3.23	3.87	4.37	4.67
TN MFG OUTPUT / EMPLOYEE (THOUS 82 $)	47.8	48.8	49.8	50.6	52.4	53.8	55.3	56.6	57.7	58.7
PERCENTAGE CHANGE.....	3.27	2.16	1.91	1.60	3.56	2.71	2.77	2.47	1.77	1.78
US MFG OUTPUT / EMPLOYEE (THOUS 82 $)	44.3	45.9	47.2	48.0	49.9	52.1	54.2	56.1	58.2	60.5
PERCENTAGE CHANGE.....	3.50	3.72	2.74	1.75	3.96	4.45	4.07	3.44	3.68	4.00
TN PER CAPITA INCOME ($).....	12597.	13332.	14028.	14880.	15835.	16783.	17803.	18979.	20276.	21556.
PERCENTAGE CHANGE.....	6.53	5.84	5.22	6.07	6.42	5.98	6.08	6.61	6.83	6.31
TN POPULATION (THOUS.).....	4840.	4876.	4915.	4960.	5007.	5057.	5108.	5154.	5194.	5241.
PERCENTAGE CHANGE.....	0.77	0.74	0.80	0.92	0.95	1.00	1.01	0.90	0.78	0.91

SOURCE: ANNUAL TENNESSEE ECONOMETRIC MODEL, CENTER FOR BUSINESS AND ECONOMIC RESEARCH, UT-KNOXVILLE.

tivity during the 1960-1969, 1969-1973 and 1979-1987 periods.

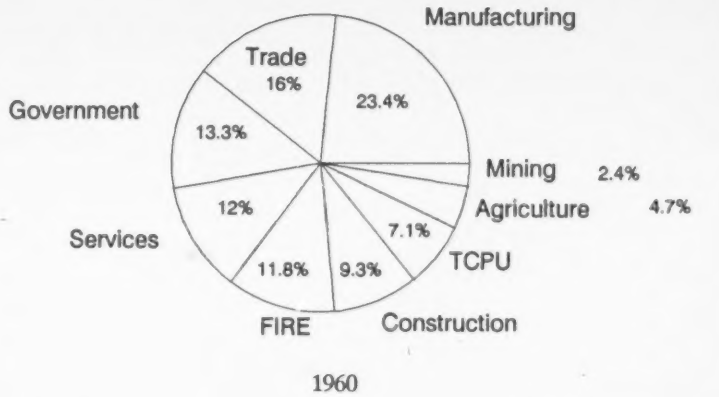
Employment growth is expected to be quite weak in Tennessee for both 1988 and 1989, largely reflecting the cyclical movement towards full employment and the subsequent slowdown in the economy. During the remainder of the outlook period, employment growth will remain moderate relative to recent history, with state-specific annual growth rates falling in the 1.4 to 1.9 percent range. These growth rates are a reflection of longer-run demographic changes, including fewer new teen-aged labor market participants and stabilized (though still growing) labor force participation rates of women.

The projected annual unemployment rates reveal two trends of interest. First, one can observe increased rates of unemployment, particularly in the state, for 1988-1990, which again simply reflect the slowdown in economic activity anticipated over this period. Second, the unemployment rates for the state and nation tend to decline and converge as movement towards 1996 takes place. This is indicative of a long-run trend of declining rates of both structural and frictional unemployment.

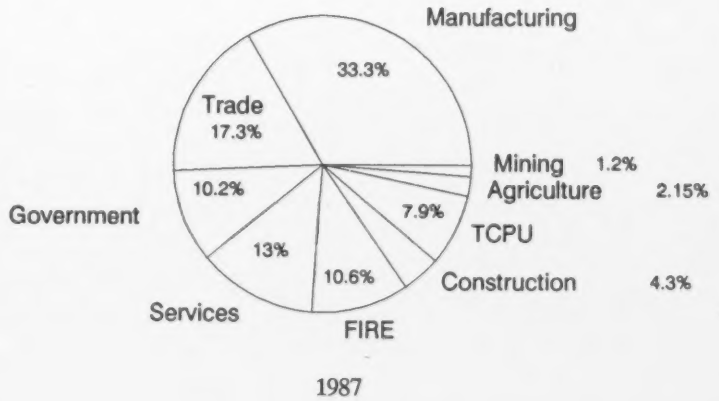
The state's compound annual growth rate in real personal income (2.77 percent) will exceed the growth rate of personal income for the national economy (2.26 percent) over the long-run forecast period. The growth of nominal personal income will be moderated by relatively low rates of inflation. Adjusting for population, the growth rate in real per capita personal income for the state will amount to 1.86 percent, as opposed to 1.29 percent for the U.S. These latter rates of growth are largely consistent with the economy's experience since 1973, but lag far behind the growth rates for 1960-1973.

Finally, Table 5 indicates a certain degree of price stability over the

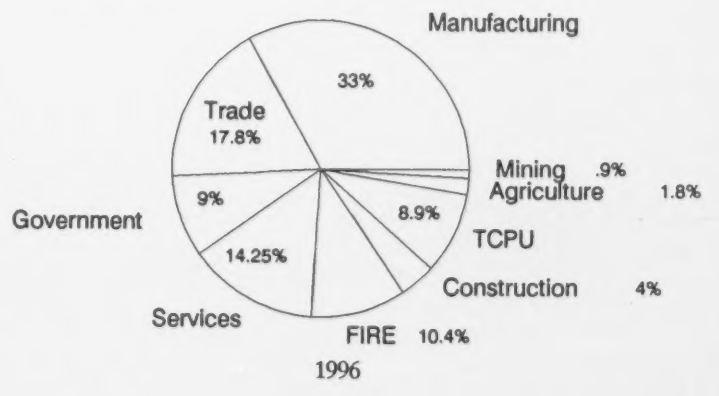
FIGURE 8
Percentage Distribution of Tennessee Real Output
1960, 1987, and 1996



1960



1987



1996

outlook period, with inflation averaging only 3.9 percent in the state and 3.8 percent for the national economy. These rates compare quite favorably with the experience of the last 20 years. Some of the highest rates of inflation occur in the early and late years of the long-run outlook when the economy approaches full employment.

Projected Sectoral Trends

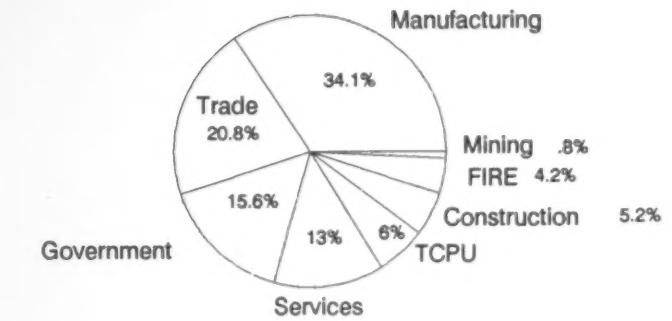
As with the economy-wide trends, only limited reference was made to sectoral projections in the context of the historical review presented above. (The sector-specific compound annual growth rates in output, employment and wage and salary compensation are presented in Tables 2 through 4.)

Output Growth. To illustrate the changing composition of economic activity in the state, Figure 8 contains the percent distribution of gross state product (GSP), by sector, for 1960, 1987, and 1996. Perhaps the most dramatic overall trend is the increase in the relative contribution of manufacturing, from 23.4 percent of GSP in 1960 to a projected rate of 33.0 percent in 1997. However, it should be emphasized that most of this growth was realized by 1969, when manufacturing comprised 30.7 percent of GSP.

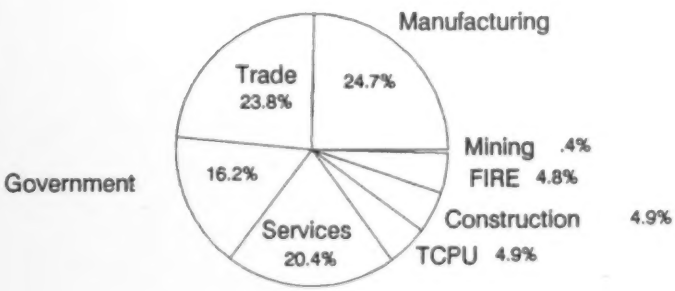
The marginal decline in manufacturing's contribution to GSP over the forecast period is due primarily to the lower-than-state-average performance of nondurables. In general, the rates of growth in output for all nondurable subsectors will be positive over the outlook period (an exception is chemicals in 1989), but will lag behind the state average. Output growth in durables will exceed overall state output growth, with the best performance in the transportation equipment subsector. One reason for the above-average outlook for transportation equipment is the opening of the Saturn plant.

The remaining sectors of the economy fail to exhibit dramatic changes over time. Over the forecast period, the sectors which will increase in relative size are trade, TCPU, services and durables manufacturing. All of these gains, including those attributable to

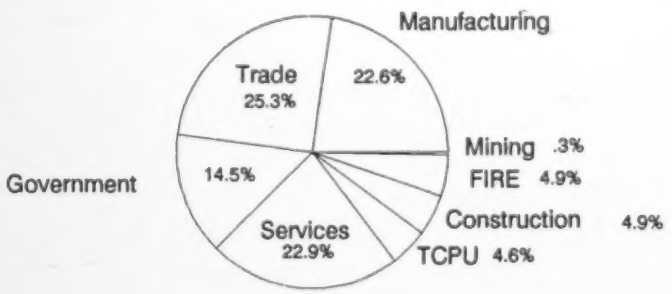
FIGURE 9
Percentage Distribution of Nonagricultural Jobs
1960, 1987, and 1996



1960



1987



1990

the service sector, are expected to be modest; in terms of output growth there is no evidence of a major burgeoning of the service sector. The government, mining, agriculture and FIRE sectors will all decline in relative importance between 1987 and 1996.

Nonagricultural Employment Growth. To complement the discussion on the composition of output and its growth over time, Figure 9 contains the percent distribution of Tennessee nonagricultural employment, by sector, for 1960, 1987 and 1996. A fundamental point revealed by a comparison of Figures 8 and 9 is that increases (decreases) in a sector's contribution to GSP need not imply an increased (decreased) share of employment for that sector; for example, manufacturing (government) from 1960 to 1987. Such a phenomenon can be attributable to sectoral changes in productivity. The relative decline in the share of manufacturing employment between 1960 (34 percent) and 1996 (22.6 percent) is expected to be substantial. However, manufacturing output has remained as a relatively stable share of GSP since 1969. Thus there have been significant improvements in productivity in the manufacturing sector of the economy. Productivity in manufacturing will remain significantly above the state average throughout the forecast period (both nondurable and durable).

The decline in manufacturing's share of employment is attributable more to nondurables than durables. The share of employment in durable manufacturing declined only from 12.4 percent in 1960 to 12.1 percent in 1987. This relative contribution will continue to fall to a projected level of 11.2 percent in 1996, contrasting sharply with the trend in nondurables employment, which in 1960 comprised 21.6 percent of total state employment, but will account for only 11.3 percent of state nonagricultural employment by 1996.

The decline in the share of employment in manufacturing over the outlook period is a reflection of compound annual growth rates in employment (0.66 percent) which fall short of the statewide average (1.67 percent). The durables sector, led by fabricated metals and transportation equipment, will

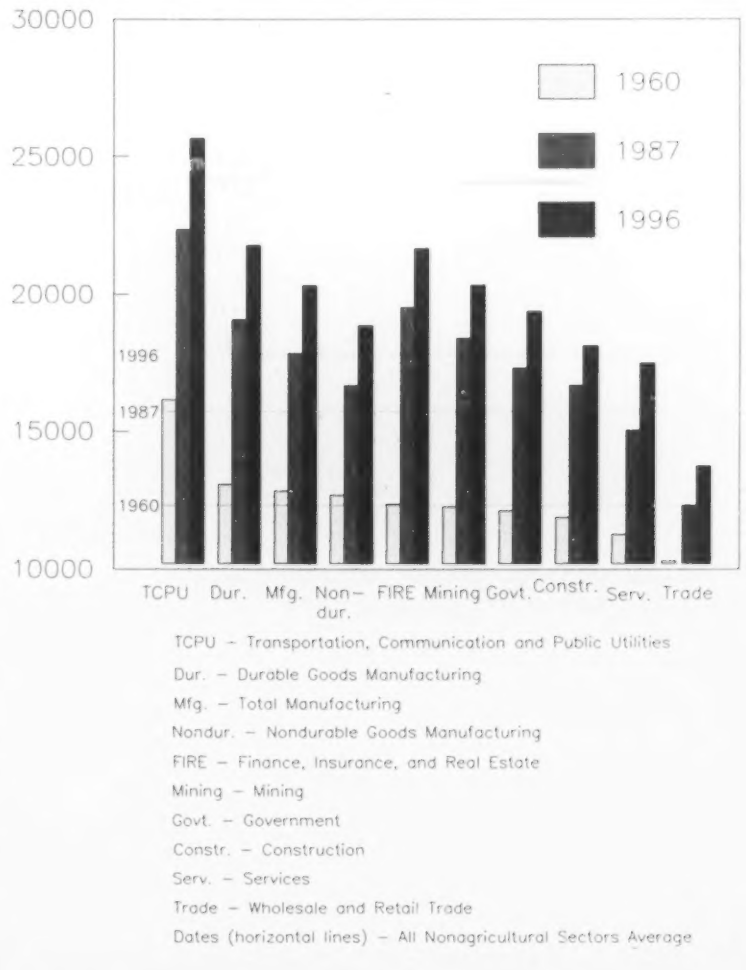
The 1987 state average level of wage and salary compensation amounted to $15,427 (1982 dollars), and will increase at a 1.3 percent compound annual growth rate to $17,329 in 1996.

continue to perform better than the nondurables sector; however, only the growth in transportation equipment employment will exceed the state average. The nonelectrical machinery and lumber and wood subsectors of durables manufacturing will realize the smallest rates of growth (approaching zero). The two most dynamic subsectors of nondurables manufacturing will be printing and publishing, and rubber and plastics. However, the compound annual growth rates of employment for these more robust subsectors will nonetheless fall short of the state average. For the textiles and "other" nondurables subsectors, employment growth will on average be negative.

In the nonmanufacturing sectors, the biggest changes over time relate to the rapid growth of services employment and the significant decline in mining employment between 1960 and 1987. Over the outlook period, mining, TCPU and government will be of declining importance, and trade and services will post the largest relative gains; however, none of these changes is particularly large.

Wage and salary projections. In Figure 10, real (1982 dollars) average wage and salary levels are presented for key nonagricultural sectors of the state economy for the years 1960, 1987, and 1996. The 1987 state average level of wage and salary compensation amounted to $15,427 (1982 dollars), and will increase at a 1.3 percent compound annual growth rate to $17,329 in 1996.

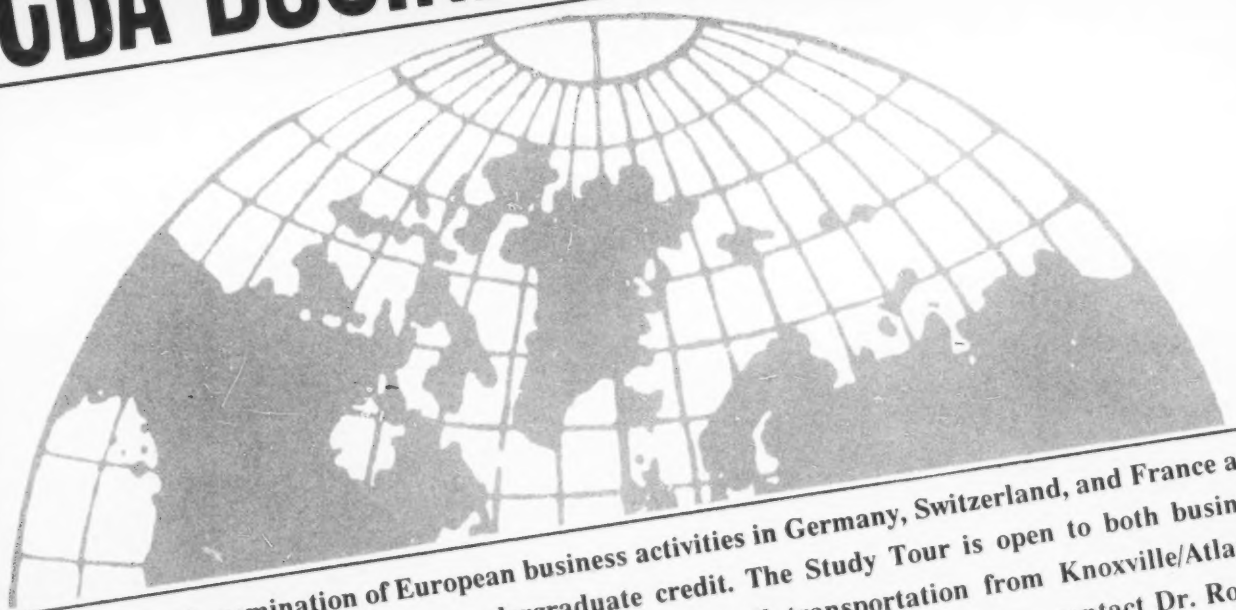
FIGURE 10
Tennessee Real Average Wage and Salary by Sector
1960, 1987, and 1996



In general, the overall state average has been dominated by the largest employment sectors of the economy, manufacturing, trade and services, which in 1987 comprised 68.9 percent of total state nonagricultural employment. While wage and salary compensation in manufacturing has performed and will continue to perform better than the state average, trade, and (to a lesser extent) services act as a drag on economy-wide wage and salary growth. In 1987, the average wage and salary in the trade sector was only 76 percent of the state average (in large part due to the high percentage of part-time workers in trade); for the services sector, the comparable figure was 93 percent. This pattern will remain through 1996, although some relative gains are expected in the services sector as compensation approaches parity with the state average.

The sectors with the highest wage and salary levels have historically been, and will continue to be, TCPU, the federal government component of the government sector and, more recently, mining. However, since employment in these three sectors will amount to only 8.6 percent of total nonagricultural employment in 1987, there is only a limited impact on the overall state average.□

ANNOUNCING...THE 7TH ANNUAL CBA BUSINESS STUDY TOUR.



Join us in a planned examination of European business activities in Germany, Switzerland, and France and earn up to three hours of graduate or undergraduate credit. The Study Tour is open to both business persons and students at a cost of $2,099,* which includes all transportation from Knoxville/Atlanta, accommodations at first-class hotels (dbl. occ.), and breakfast. For more information, contact Dr. Robert Maddox (615-974-3161), Dean John Moore (615-974-5061), or John Kirchenstein (615-974-5311).

*Based on currency rates as of January, 1988.

EUROPEAN BUSINESS STUDY TOUR
Reservation/Information Request Form

Name: _____ Tel: _____

Street: _____ Apt #: _____

City: _____ State: _____ Zip: _____

__ Please send detailed information about the European Business Study Tour.

__ I am interested in earning college credit for participation.

__ Deposit of $500 is enclosed. Make checks payable to: UT European Business Study Tour. To avoid a late registration fee of $25.00, checks must be received by March 15, 1988.

Return to: John Kirchenstein, College of Business Administration, The University of Tennessee, Knoxville, 716 Stokely Management Center, Knoxville, TN 37996-0570

REGISTRATION DEADLINE IS MARCH 15, 1988.

N 476 .S 49
CONGRESSIONAL INFORMATION SERVICE
ATTN: SPI
4520 EAST-WEST HIGHWAY
BETHESDA MD 20814

The University of Tennessee
Winter 1988
Volume 23 Number 3

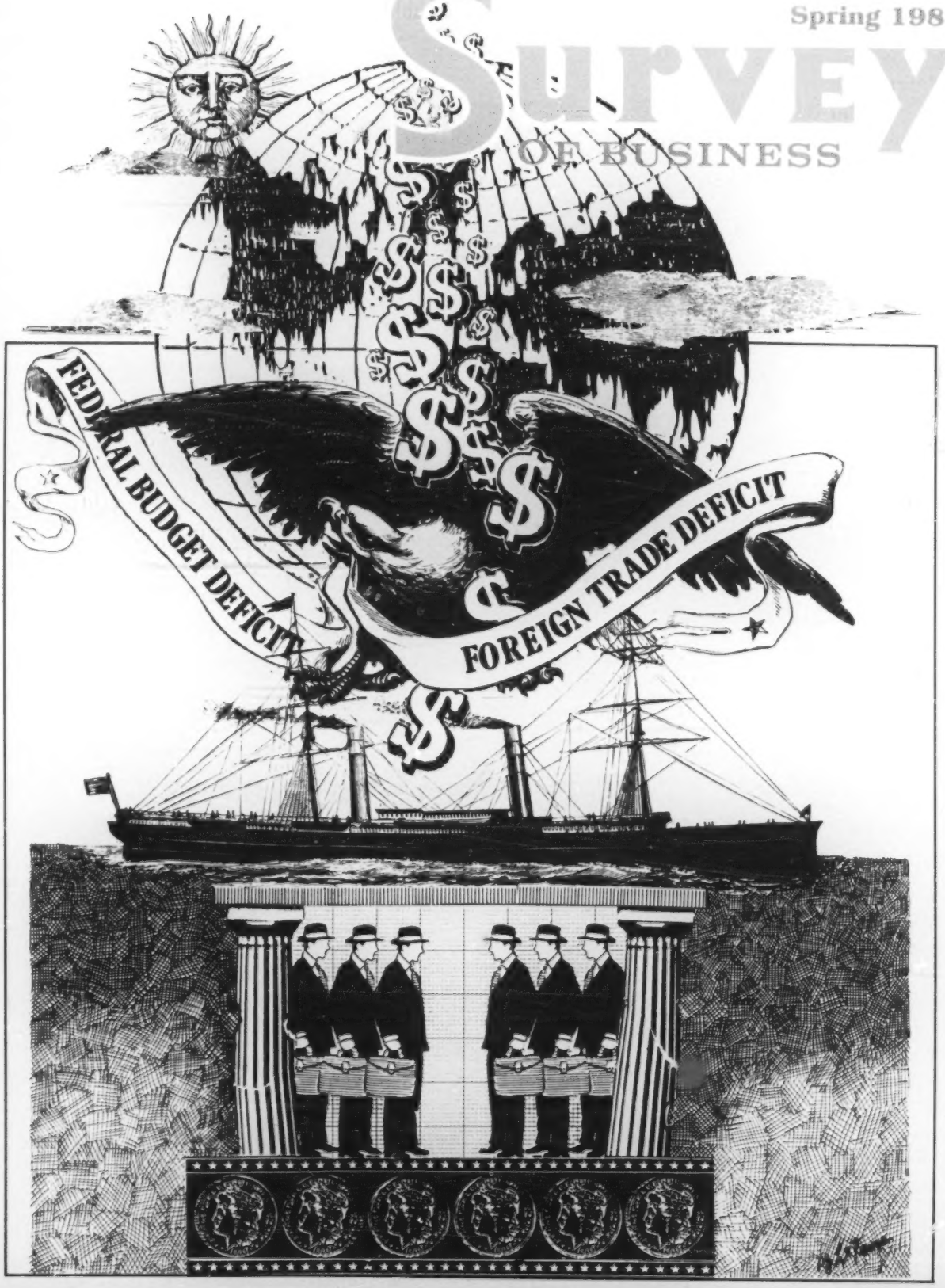
Survey of Business

5/31/88 U8710-1

Center for Business and Economic Research College of Business Administration The University of Tennessee, Knoxville

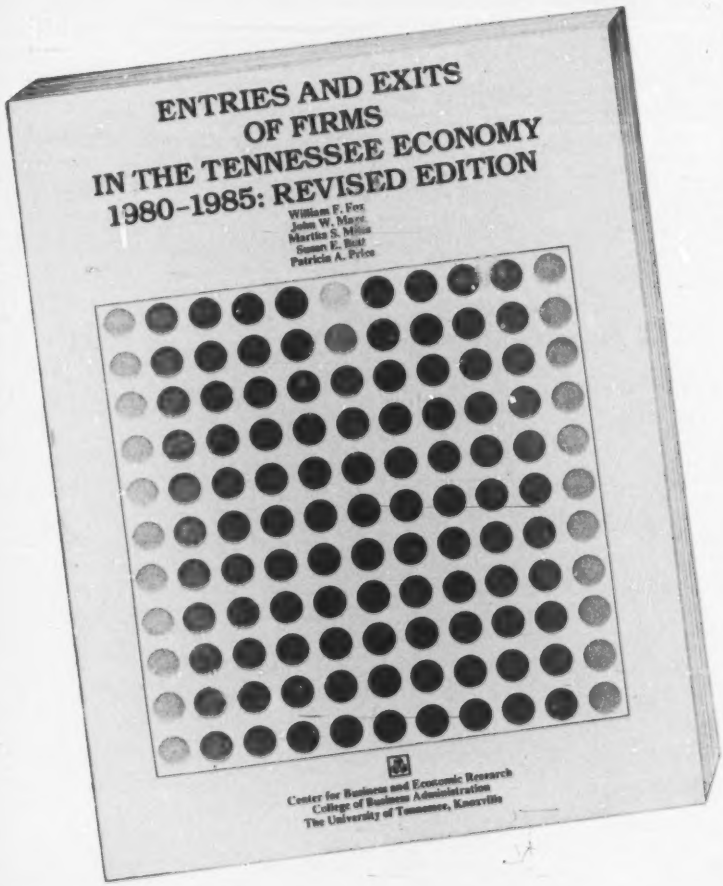
Spring 1988

Survey OF BUSINESS



NOW AVAILABLE

from the socioeconomic monograph series of the Center for Business and Economic Research, College of Business Administration.



Entries and Exits in the Tennessee Economy 1980 - 1985: Revised Edition.

The latest version of the study by CBER and the Tennessee Department of Employment Security of entries and exits of firms which have located in the state, including industries in which the firms are located, the geographic areas where exits and entries have occurred, and the sizes of firms involved.

Information for the study was collected from a data set consisting of 95,000 establishments in Tennessee.

Please send me _____ copy(ies) of **ENTRIES AND EXITS OF FIRMS IN THE TENNESSEE ECONOMY: REVISED EDITION** at the price of $9.50, plus $1.05 postage and handling per copy.

Make checks payable to The University of Tennessee, and mail to Center for Business and Economic Research, 1000 Volunteer Blvd., Suite 100, Knoxville, TN 37996-4170. ☐ Bill Me. ☐ Payment Enclosed.

SEND TO:

NAME

ADDRESS

CITY STATE ZIP

C O N T E N T S

Consulting Editor's Comments	**2**	*Don P. Clark*
The U.S. Trade Deficit: A Graphic Review *by Don P. Clark*	**3**	*Don Clark is Associate Professor of Economics at The University of Tennessee, Knoxville. He publishes in the areas of trade theory and commercial policy.*
Eliminating the Trade Deficit What are the Options? *by Charles B. Garrison*	**15**	*Charles Garrison, Professor of Economics, The University of Tennessee, Knoxville, publishes in the area of macroeconomic theory and policy.*
A Slow Leak: Effects on the U.S. of Shifts In International Investment *by Niles C. Schoening*	**21**	*Niles Schoening, Associate Professor of Economics and Finance at the University of Alabama in Huntsville, teaches international finance and publishes in the field of regional economics.*
The U.S. Marketplace and Foreign Competition in Product Quality: 1961 to 1985 *by David J. Faulds*	**27**	*David Faulds is an Assistant Professor of Marketing at The University of Tennessee, Knoxville, and publishes in the areas of international marketing and competitive strategy.*

SURVEY OF BUSINESS

C. Warren Neel, Dean
College of Business Administration

CBER APPOINTMENTS

David A. Hake, *Director and Editor,* **Survey of Business**
William F. Fox, *Associate Director and Research Associate Professor*
John W. Mayo, *Research Assistant Professor*
David M. Mandy, *Research Assistant Professor*
Matthew N. Murray, *Research Assistant Professor*
Lynell Aycock, *Clerk-typist*
Susan E. Bott, *Research Assistant*
Pamela L. Bridgman, *Research Asst.*
Maxwell J. Cornelius, *Manager, Computer Resources Group*
Deborah W. Crowder, *Office Supervisor, Computer Resources*
Victoria Cunningham, *Research Asst.*
Penelope M. Gilmore, *Research Assoc.*
Donna Kemper, *Senior Secretary*
Jean Knuckles, *Assistant to the Director*
Carol E. Lammers, *Research Associate*
Jennifer F. Langston, *Senior Secretary*
Carla Newton, *Secretary*
Patricia A. Price, *Sr. Research Associate*
Betty B. Vickers, *Research Associate*
Melissa Wood, *Research Assistant*

Graduate Research Assistants
Tim Essenburg
Joseph Flynn
Maria Teresa Hocson
Janet Knoedler

Consultants
Kenneth E. Quindry, *Professor Emeritus*

Art Director
Richard J. LeFevre, *Associate Professor of Art*
Donna S. Hundley, *Technical Art*

PUBLICATIONS GROUP

Jeanne P. McDonald, *Managing Editor*
Joan S. Carr, *Research Assistant*
Lynn J. Landry, *Publications Coordinator*
Patricia A. Hunley, *Word Processing Group Supervisor*
Julia C. Elkins, *Word Processing Specialist*
Patricia D. Flynn, *Word Processing Specialist*

Consulting Editor's Comments

Over the last few years, international economic events have received much attention in the news media. Fluctuating exchange rates, the sharp rise and subsequent decline in the dollar's value relative to other currencies, large and growing U.S. merchandise trade deficits, the U.S. transition from creditor to a debtor nation, erosion of the U.S. competitive position at home and in world markets, and increased sensitivity of the U.S. economy to external economic events are but a few examples. This issue of the *Survey* analyzes recent events in the international economic scene, focusing on topics of major concern to Tennesseans.

The first article reviews recent U.S. trade performance, identifying net merchandise trade as the key factor responsible for determining the U.S. current account deficit. A poor performance in manufactures trade, the largest merchandise trade component, is the major contributor to the trade deficit. Since 1982, our trade balance registered declines against virtually all major trading nations and nearly all of the major product categories. This suggests that macroeconomic factors are primarily responsible for deterioration of the U.S. international payments position.

Causes of growth in the trade deficit and macroeconomic requirements for eliminating the deficit are discussed in the second article, by Charles B. Garrison. Since macroeconomic policies followed by the U.S. and major trading partners were responsible for increasing the U.S. trade deficit during the first half of the 1980s, new macroeconomic policies, as well as policy coordination among the United States and other industrial nations, will be required to eliminate the U.S. trade deficit.

Niles C. Schoening's contribution examines the relationship between capital inflows and the U.S. current account deficit and explains how international investment and capital inflows affect the U.S. balance of payments. Also included in the article is a discussion of recent deterioration in the United States international investment position and the transition of the United States from a creditor to a debtor nation.

In the final article, David Faulds discusses the strategic importance of product quality in international markets and summarizes key forces driving product quality in seven nations. He uses an objective measure of product quality to test hypotheses dealing with quality competition. Although West Germany and Japan tend to dominate product quality competition, quality differences between U.S.-made consumer products and those from Japan appear to have narrowed slightly in recent years.

The cover art for this issue, by Richard LeFevre of the U.T. Art Department, was inspired by an article in the last issue of the *Survey* and illustrates the interrelationship of the trade deficit and the federal budget deficit. Graphics in the first article came from a presentation at the U.S.-Hungarian Economic Roundtable at Indiana University in October of 1987 by Allen Lenz, Director of the Office of Trade and Investment Analysis in the International Trade Administration.

Don P. Clark,
Consulting Editor

SURVEY OF BUSINESS, The University of Tennessee, Knoxville (ISSN 0099-0973), is published quarterly by the College of Business Administration, Center for Business and Economic Research, The University of Tennessee, Knoxville to inform the Tennessee business professional about current economic and socio-economic trends and techniques developing in the state. Authorization No. EOI-1490-002-87. Back issues and article reprints may be ordered at $1.25 per copy. Address correspondence to Editor, Center for Business and Economic Research, Suite 100, Glocker Hall, The University of Tennessee, Knoxville, Knoxville, Tennessee, 37996-4170. Second class postage paid at Knoxville and Nashville, Tennessee. Requests for inclusion on mailing list and address corrections should be sent to the same address. The publisher of the Survey *assumes no responsibility for statements made by writers. Articles reflect the opinions of the authors. Postmaster: Send Change of Address form 3579 to: Center for Business and Economic Research, The University of Tennessee, Knoxville, Knoxville, Tennessee, 37996-4170.*

THE U.S. TRADE DEFICIT:
A GRAPHIC REVIEW

by Don P. Clark

FIGURE 1

U.S. Current Account Balances, 1970-87

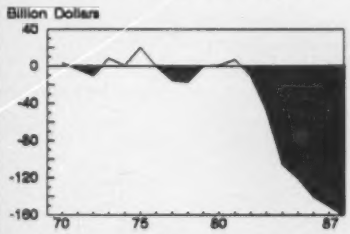


Figure 1 in our 19-step graphic review tells the story of the rapid deterioration of the U.S. international payments position. On the following pages, other figures show some of the components that have led the country into a serious international competition problem. The text highlighted in red provides the narrative for a quick overview of the U.S. trade dilemma.

During the 1980s, the United States has experienced an unprecedented deterioration in its international payments position. The U.S. current account balance--a measure of the balance of goods and services trade, international investment payments and receipts, and unilateral transfers (net money transfers that carry no obligation of repayment) hit a record deficit of $159 billion in 1987, adding $18 billion to the accumulated $141 billion deficit recorded one year earlier.

The U.S. current account deficit expresses the excess of each year's dollar outpayments for current account transactions by U.S. residents to the rest of the world over dollar inpayments into the U.S. from sales abroad. When the U.S. runs a current account deficit, dollar outpayments exceed inpayments, and foreigners increase their holdings of U.S. dollars. Foreigners can use the accumulated dollars to purchase U.S. dollar-denominated assets; foreign corporations can establish subsidiaries in the U.S.; and foreigners can purchase U.S. stocks and bonds, open accounts in U.S. banks, or buy physical property in this country. Some of the dollar holdings may, in fact, be used by foreign governments to repay U.S. government loans. All transactions of this type increase net foreign asset holdings in the U.S. and represent U.S. borrowing from abroad to finance the country's current account deficit. This deficit reflects the fact that the U.S. is saving less than is necessary to finance its private investment and government budget deficit. In this sense, the budget deficit and the trade deficit are inevitably linked. A country that constantly runs a

current account deficit will eventually become a debtor nation, with total foreign holdings of assets in the home country exceeding home country claims on foreign assets.

FIGURE 1: Large current account deficits, beginning in 1983, quickly converted the United States from the world's largest creditor nation in nominal terms to the world's largest debtor nation. By 1985, foreigners owned more assets in the United States than Americans held abroad.

FIGURE 2: Current account deficits have expanded sharply each year since 1982, both in absolute terms and relative to growth in the U.S. gross national product (GNP). A surplus in the current account was equivalent to 0.2 percent of GNP in 1981, 0.3 percent of GNP in 1982, and to 3.4 percent of GNP in 1986. It is expected to remain about the same for 1987.

The accumulated U.S. debt position relative to GNP reached 6 percent by 1986, which is equivalent to each U.S. citizen's borrowing $580 from abroad. The United States can continue to run deficits of this magnitude only as long as foreigners are willing to finance it by accumulating U.S. assets in return for dollars. As our international indebtedness grows, foreigners will be less willing to finance U.S. current account deficits over time. Thus, when the rate of foreign debt accumulation falls, it forces a decline in the dollar's value, which reduces living standards in the United States by making imports more expensive and lowering real income growth.

Merchandise Trade

FIGURE 3: A comparison of balances for individual current account components clearly identifies net merchandise trade as the key factor responsible for determining both the U.S. current account balance and the rapid change in the U.S. international investment position from a creditor to a net debtor.

Components of the United States current account are dominated by

FIGURE 1
U.S. Current Account Balances, 1970-87

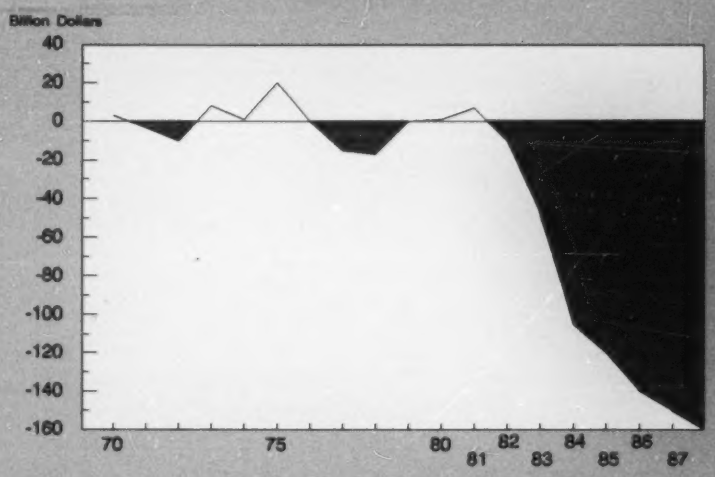


FIGURE 2
U.S. Current Account Balances
as a Percent of GNP, 1981-87*

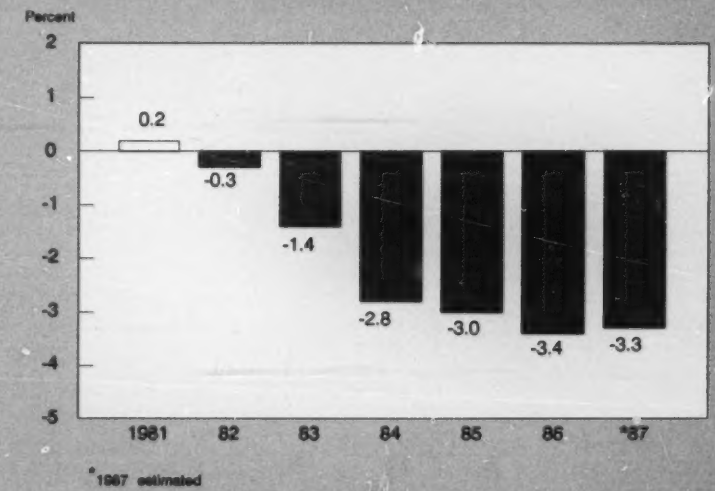


FIGURE 3
Components of U.S. Current Accounts, 1986
(Balance of Payments)

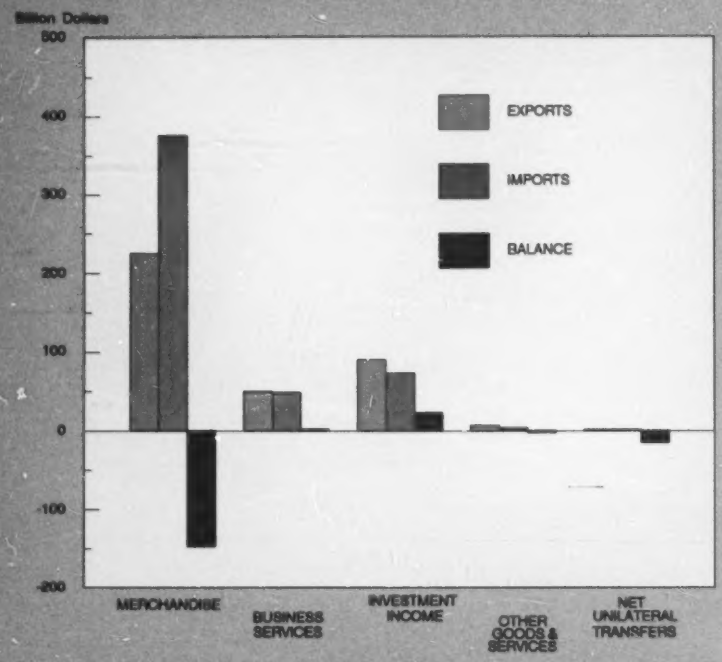
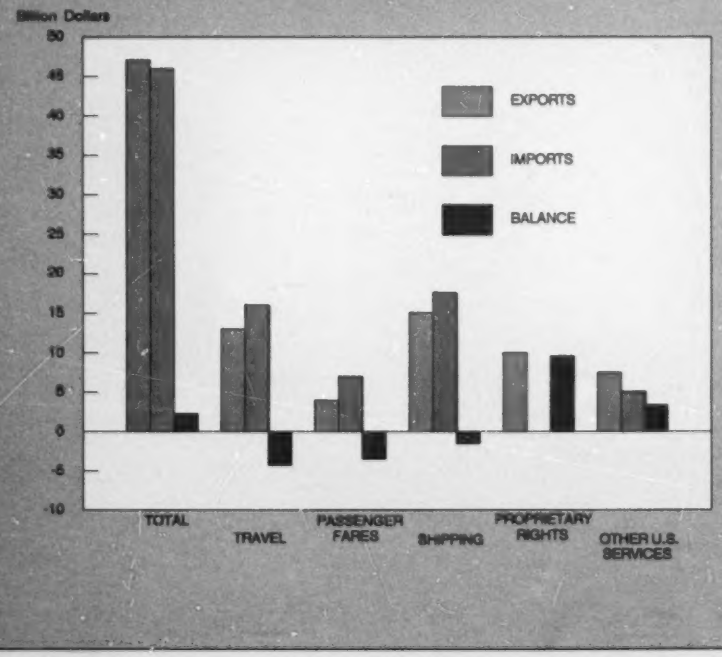


FIGURE 4
Components of
U.S. Business Services Trade, 1986



merchandise (goods) trade, which comprises 67 percent of all current account transactions in 1986. Business services--travel, transportation, proprietary rights, banking, insurance, communications, consulting, and other activities in which the item is not a physical good--comprised 11 percent of the current account, while receipts of income from past U.S. investments abroad made up 14 percent. Other goods and services and unilateral transfers--nonmilitary government aid, private remittances, and pension plan payments to U.S. residents living abroad--accounted for the remainder of current account transactions.

The 1986 merchandise trade deficit of approximately $148 billion swamped the small surpluses on business services, investment income, and "other goods and services" categories. In addition, the merchandise trade deficit was reinforced by a $15 billion deficit on unilateral transfers. Since the current account deficit can be attributed almost entirely to the rapidly expanding merchandise trade deficit, balancing the international accounts will ultimately require running large merchandise trade surpluses.

The United States has recently been in a slow transition toward a service economy. Private service activities--those businesses primarily involved in producing services rather than tangible goods--currently comprise well over one-half of U.S. output. But the potential of an improved performance in business service exports as a possible solution to stemming growth in the U.S. current account deficit is unlikely. Total trade in services is quite small in comparison to U.S. merchandise trade--only about one-sixth as large.

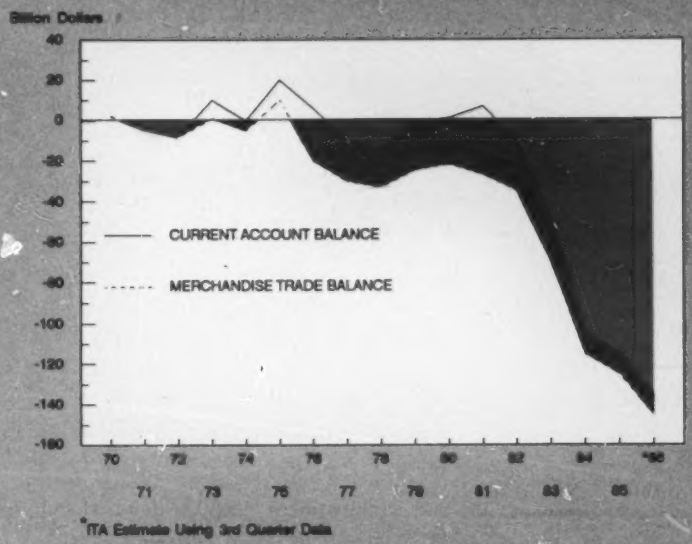
FIGURE 4: Identifies components of internationally traded business services trade. Historically, the United States has experienced large deficits in the travel, passenger fares, and shipping categories. These deficits are typically offset by surpluses in the other service trade components. Transactions involving proprietary rights--fees and royalties for the use of

U.S. technology--provide significant amounts of export receipts. Transactions in this category are derived from established relationships between U.S.-based multinationals and their affiliates abroad. Net trade in proprietary rights is expected to decline in years to come as foreign direct investment in the United States expands at a more rapid pace than U.S. direct investment abroad. The U.S. enjoys a strong comparative advantage in "other business services," which includes construction, engineering, consulting, banking and other financial services, communications, insurance, etc. Some policymakers expect that this category will be a major source of improved trade performance in the future, however, trade in this category does not produce very large export receipts and is not likely to be a critical factor in improving the U.S. current account balance.

Changes in the Merchandise Trade Balance

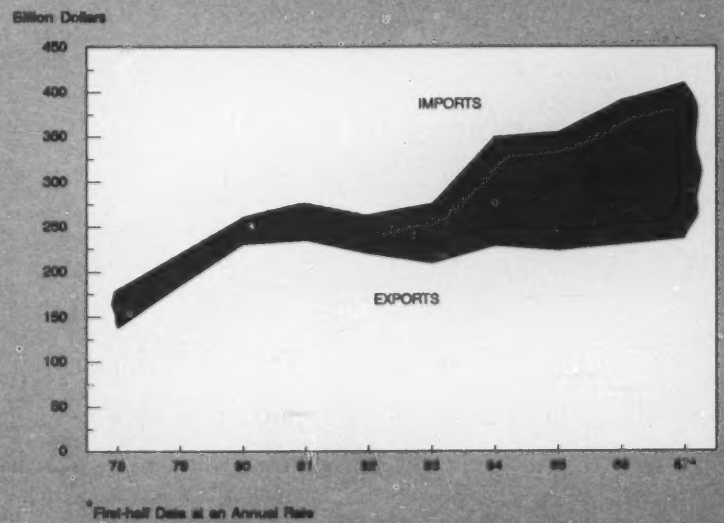
FIGURE 5: Prior to the 1970s, the United States enjoyed sizable surpluses in merchandise trade. During the 1970-1986 period, deficits occurred in all years except 1973 and 1975. The annual deficits grew to the $31-34 billion range between 1977 and 1978, partly because of higher oil prices during the early 1970s. The close correspondence between movements in the merchandise trade balance and the current account balance illustrates the fact that the former inevitably determines the latter. The trade deficit shrank between 1978 and 1980, only to rise sharply again beginning in 1982. Deterioration in the merchandise trade balance has been most pronounced since 1982. This has come about as a result of macroeconomic forces, including the fall in U.S. price competitiveness associated with appreciation of the dollar between 1980 and 1985, rapid growth of United States demand relative to output growth at home and to demand and output growth abroad, and large United States budget deficits

FIGURE 5
U.S. Current Account and Merchandise Trade Balances (Balance-of-Payments Basis), 1970-86*



*ITA Estimate Using 3rd Quarter Data

FIGURE 6
U.S. Merchandise Exports, Imports and Deficit, 1978-87*



*First-half Data at an Annual Rate

Deterioration in the merchandise trade balance has been most pronounced since 1982 as a result of the fall in U.S. price competitiveness, rapid growth of U.S. demand relative to output growth at home and to demand and output growth abroad, and large U.S. budget deficits.

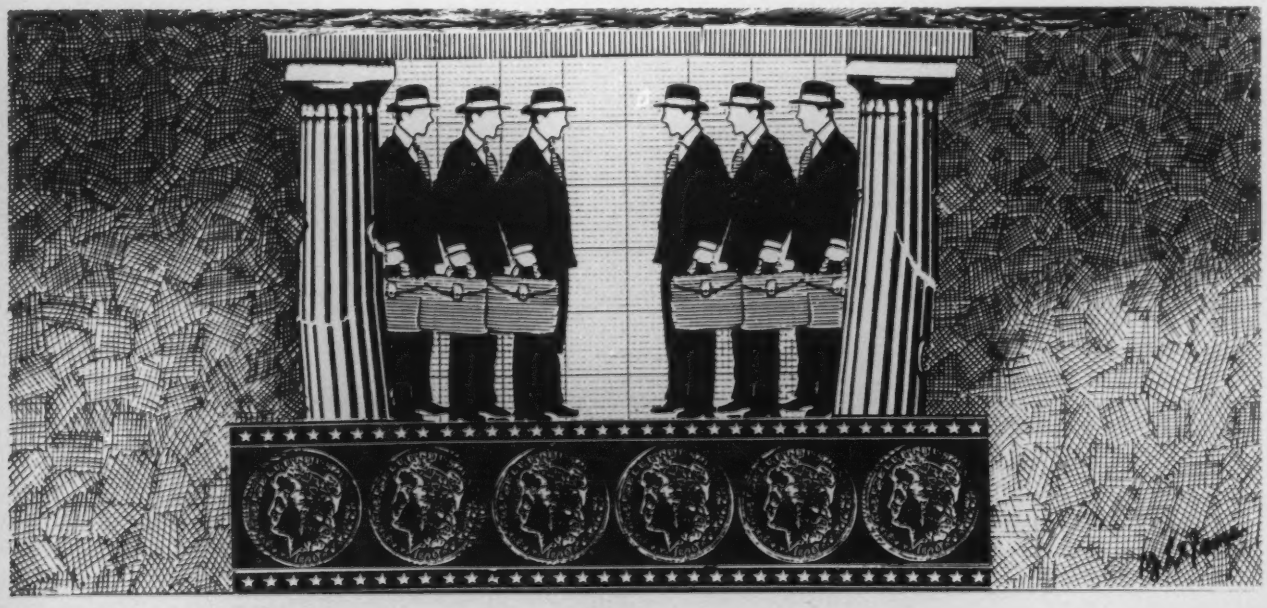
which upset the national savings investment balance.

FIGURE 6: The resulting stagnation of U.S. exports and dramatic increase in U.S. imports are highlighted. Merchandise imports expanded rapidly from 1982 to 1984, grew slowly over the 1984-85 period due in large part to to declining oil prices and reduced oil imports, and accelerated considerably faster than U.S. exports in the post-1985 period. This surge of imports occurred despite the large depreciation of the dollar that began early in 1985, which made imports more costly to U.S. consumers.

J-Curve Effect

Failure of the falling dollar to improve the nominal trade balance has been attributed to the "J-curve effect," which refers to the shape of the adjustment path followed by the trade balance in response to a discrete exchange rate change. When the dollar drops in value (depreciates) by a given amount, import prices rise more rapidly in dollar terms than do export prices. Since import and export orders have been contracted for months in advance, the immediate effect of dollar depreciation is to raise the value of the precontracted level of imports. This serves to aggravate the deficit. Over time, the trade balance improves with a reduction in the rate of growth of imports and an increase in rate of growth of exports. As a result of these factors, the trade balance worsens before it improves, following a "J-shaped" path. However, since 1985 the dollar has not experienced a one-step drop followed by a movement of the trade balance along a clear J-shaped adjustment path. Instead, the dollar has been falling steadily, creating a series of J-shaped effects. This helps to explain the persistent deficits in the nominal trade balance. When measured in constant dollars, the real trade deficit, excluding petroleum imports, began shrinking in the second half of 1986. The annual merchandise trade deficit in 1987, expressed in real terms, narrowed 5 percent over the 1986 level.

Several factors have operated to limit improvement in the real trade balance. First, the dollar changed little relative to currencies of Taiwan, South Korea, Hong Kong, and Canada during the 1985-86 period, while the Mexican peso depreciated substantially relative to the dollar. These countries captured larger shares of the domestic U.S. market at the expense of Japan and West Germany, whose currencies rose in value relative to the dollar. Second, foreign firms reduced profit margins or cut costs by shifting production to low-cost countries to maintain U.S. market shares. This lessened the impact of the falling dollar on relative prices. A third factor limiting improvement in the trade balance was strong growth of U.S. domestic demand relative to that of our trading partners, which encouraged imports. Finally, some consumer and producer



goods are no longer produced in the United States, so rising import prices could not induce consumers to cut import purchases by shifting spending to domestic products.

Merchandise Trade Categories

The commodity source of deterioration of the U.S. merchandise trade balance can be identified by decomposing U.S. trade into four major categories: manufactures, mineral fuels, agricultural products, and other categories.

FIGURE 7: The dominant role of trade in manufactured goods, which comprise at least 79 percent of both U.S. merchandise exports and imports, is illustrated. More than 80 percent of world trade is comprised of manufactured goods.

Mineral fuels--mostly oil and gas--hold more importance for United States imports than exports and have generated large deficits in past years. Recent oil price declines will dampen growth in the oil import deficit in years ahead. Agricultural trade tends to contribute a small U.S. surplus each year. However, prospects for continued surpluses are slim, due to recent growth in world production of agricultural goods, coupled with slow consumption growth. Higher world output is attributed to improvements in agricultural technology and an increased reliance upon agricultural production subsidies in other industrial nations.

Other nonmanufactured goods--paper, pulp, wood, hides and skins, beverages, metal ores--have not been, nor will they be, a major factor in U.S. trade.

Manufactures Trade

FIGURE 8: Manufactures trade was responsible for more than 80 percent of the $156 billion U.S. merchandise trade deficit recorded in 1986. Other components, with the exception of agricultural goods, also contributed

FIGURE 7
Consumption of U.S. Merchandise Trade, 1986

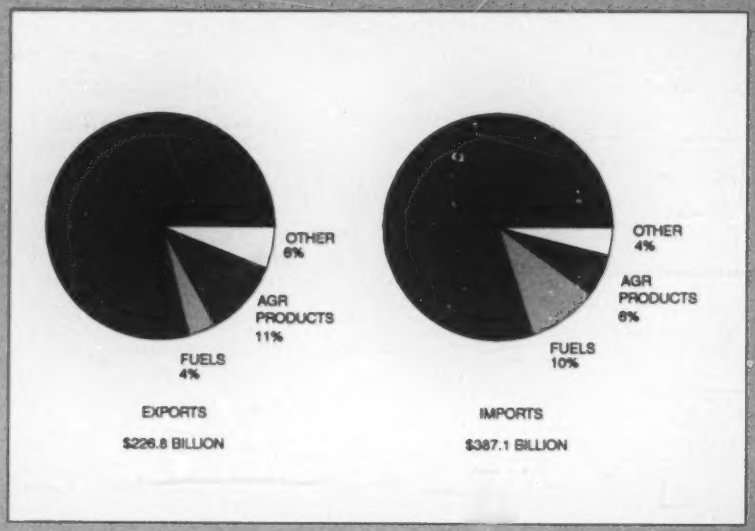
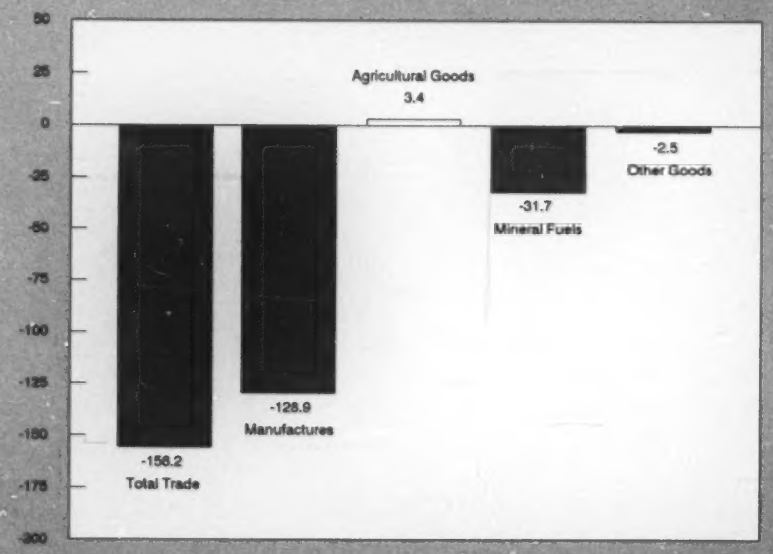


FIGURE 8
U.S. Merchandise Trade Balances, 1986



Components may not add to total due to statistical revisions.

FIGURE 9
Changes in U.S. Merchandise Trade Balances
1981-86

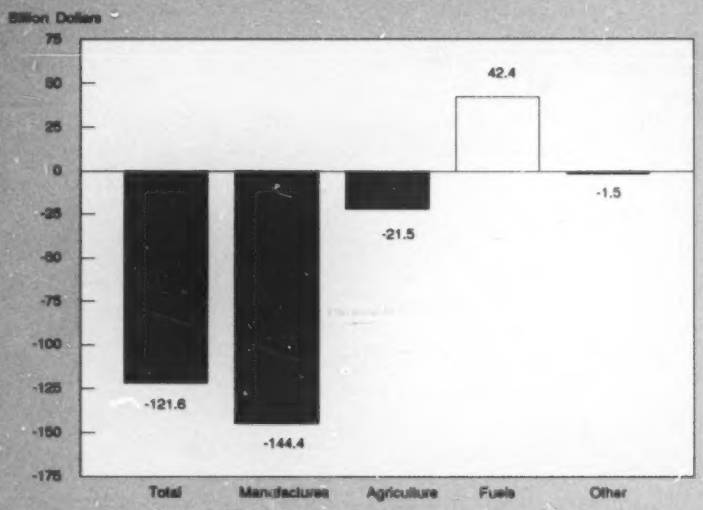
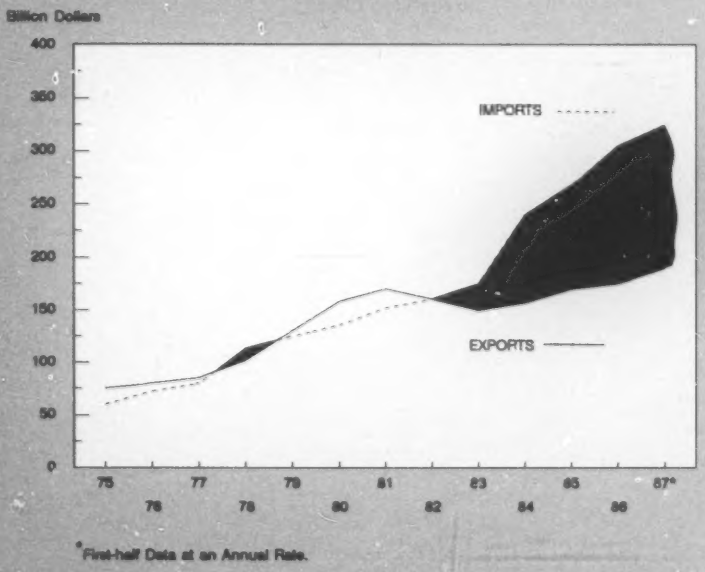


FIGURE 10
U.S. Manufactures Trade
1975-1987*



*First-half Data at an Annual Rate.

to the trade deficit but to lesser degrees.

FIGURE 9: Changes in merchandise trade balance components over the 1981-86 period reveal that a poor international performance in manufactures trade, the largest merchandise trade component, is primarily responsible for the trade deficit. Growth in the manufactures trade deficit is found to exceed growth in the merchandise trade deficit by almost $23 billion in 1986. Agricultural and "other" merchandise trade balances deteriorated over the period. Only the fuels component registered a decline in its net negative position, due to significant declines in both oil prices and oil import volumes.

FIGURE 10: Exports exceeded imports over the 1979-1982 period but lagged behind rapidly expanding imports in subsequent years. Manufactured imports in 1986 were 85 percent greater than in the 1981 period.

FIGURE 11: Between 1975 and 1981, surpluses in the manufactures trade balances were recorded in all years but 1978. Since then, the United States has experienced unprecedented increases in manufactures trade deficits. This trend is expected to continue in 1987. Although the United States remains the largest trader of manufactured goods, West Germany is the largest exporter of manufactures, followed closely by Japan.

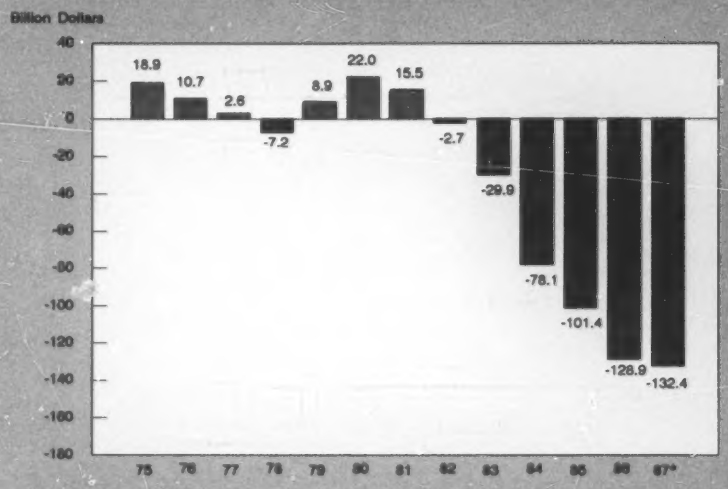
The Manufactures Deficit

FIGURE 12: The manufactures deficit is clearly the key factor responsible for the merchandise trade deficit. Since manufactures trade dominates the U.S. trade accounts, both in terms of size and in terms of recent changes, improvement in the current account must come from a stronger U.S. performance in manufactured goods trade. There are no other potential sources of improvement. Oil imports will continue to grow, but more slowly than in past years. Agricultural surpluses will remain modest. Business services will continue to play a positive but minor role in U.S. trade balances. Net international investment income can be expected to register declines in future years as the U.S. international debtor position grows. Large manufactures trade deficits will not be offset by future surpluses in any other account. Over the long term, the United States must bring exports and imports into balance and then run large surpluses to achieve a sustainable long-run current account position.

Commodity Group Trade Balances

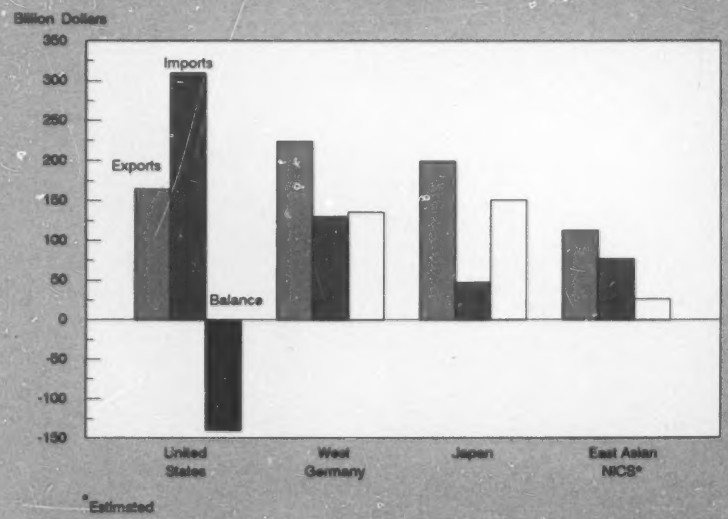
FIGURE 13: Trade balances for 16 major commodity groups are shown. FIGURE 14: Losses occurred in the manufactures trade balance for 14 of the 16 commodity groups. Collectively, these activities, which account for 75 percent of U.S. manufactured exports and imports, constitute the largest winners and losers in terms of recent trade performance. The disaggregated analysis will reveal product groups which contribute most

FIGURE 11
U.S. Manufactures Trade Balances
1975-1987



*First-half Data at an Annual Rate.

FIGURE 12
Manufactures Trade of Selected Countries, 1986*



*Estimated

FIGURE 13
U.S. Manufactures Trade Balances, By Commodity Groups, 1986

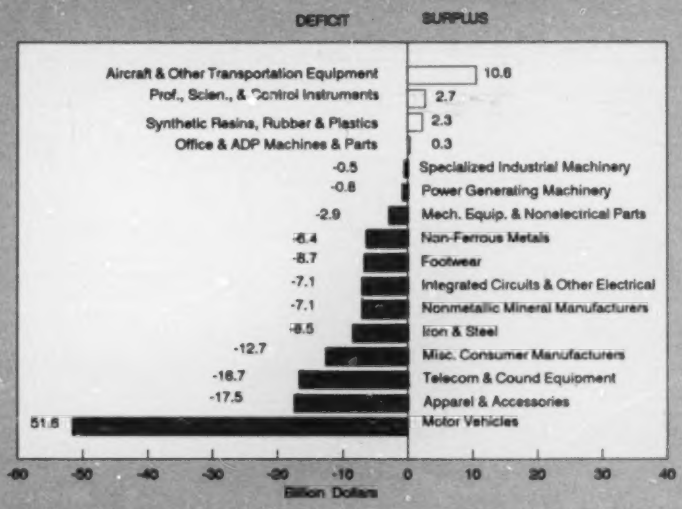
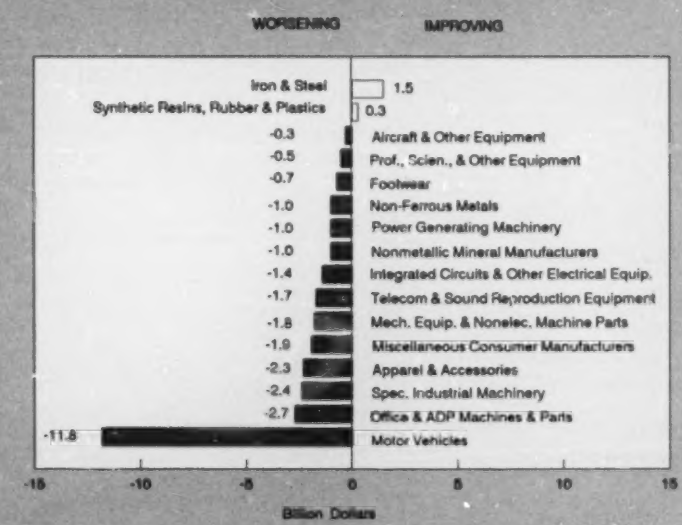


FIGURE 14
Changes in U.S. Manufactures Trade Balances by Commodity Groups, 1985-86



to the deficit and will also identify potential sources of improved trade performance. However, deterioration of the U.S. trade balance, too pervasive to be attributed to any one commodity group, is a result of macroeconomic developments in the U.S. and the rest of the world. All but four of the 16 commodity groups are in deficit.

The motor vehicles category accounts for the single largest negative entry. Foreign cost advantages, dollar appreciation, and increased foreign sourcing of parts production to supply Japanese auto plants in the United States were major factors responsible for the high level of motor vehicle imports. A 25 percent tariff on Japanese trucks failed to keep them out of the U.S. market. While United States producers faced increased competition from both Japanese and West European auto makers, some nontraditional suppliers--South Korea and Yugoslavia--gained inroads to the U.S. market.

Nonelectrical consumer goods--apparel and accessories, footwear, and miscellaneous consumer manufactures--were collectively responsible for a $36 billion deficit in 1986. East Asian Newly Industrializing Countries (NICs)--Taiwan, South Korea, Hong Kong, and Singapore--are the major suppliers of labor-intensive apparel imports. The United States negotiated bilateral quotas with major apparel-supplying countries under the Multi-Fiber Arrangement, creating an incentive for other countries to begin shipping apparel and accessories to the United States. The NICs are also responsible for one-third of the miscellaneous consumer manufactures imports. Included in this category are toys and games, rubber and plastic articles, artwork, jewelry, sound recordings, and sporting goods. Many United States producers have recently moved assembly operations to offshore locations, which encourages more United States imports of final consumer goods.

Telecommunications and sound-reproducing equipment recorded a large deficit. The latter group includes such import-sensitive electrical consumer goods as television sets, stereo equipment, video recorders, and telephones. VCRs and compact-disc players are no longer produced in the U.S. Japan, the Asian NICs, and Latin America are major suppliers of these product lines. The U.S. has been able to remain price competitive in high-tech telecommunications equipment for nonconsumer use.

So far the U.S. has been able to hold its own in the export of high-technology finished products such as aircraft and other transport equipment, super micro-minicomputers, specialty plastics, synthetic rubber, and navigational, analytical and scientific instruments. These products will be major sources of improved U.S. trade performance after appropriate adjustments take place in dollar exchange rates and in other macroeconomic variables in the U.S. and abroad.

Losses for 14 commodity groups include some high-tech activities in which the U.S. has previously enjoyed a comparative advantage--aircraft, scientific equipment, and office and ADP equipment. Imports of the less sophisticated scientific instruments have increased sharply, a trend accelerated by the movement of some U.S. assembly operations offshore. Considerable import growth has taken place in computers and components. Japan is supplying more high-quality, low-priced computers for mass markets, and U.S. producers are depending more on foreign sources for components. Motor vehicles, a non-high-technology production activity, registered the single largest trade balance deterioration, due in large part to a surge of auto imports from Japan in response to a relaxation of Japan's voluntary export restraints.

Bilateral Trade Balances

FIGURE 15: The largest U.S. surplus and deficit bilateral manufacturing trade balances for 1986 are identified. The U.S. ran bilateral trade

FIGURE 15
Largest U.S. Surplus and Deficit Bilateral Manufactures Trade Balances, 1986

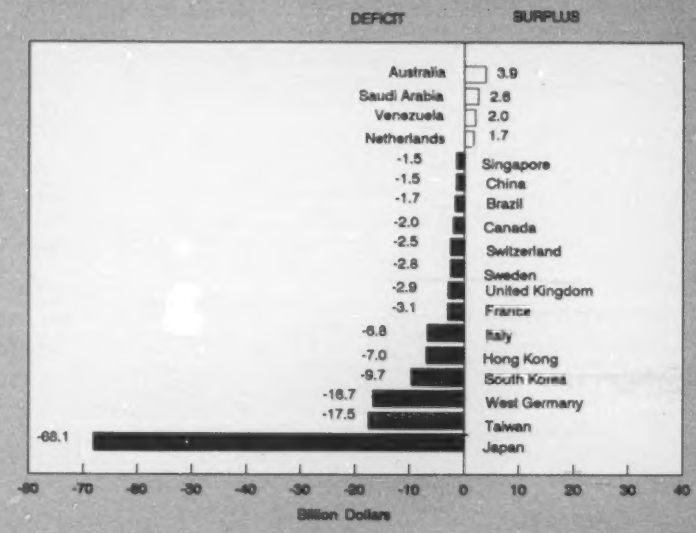


FIGURE 16
Current Account Balances, 1986

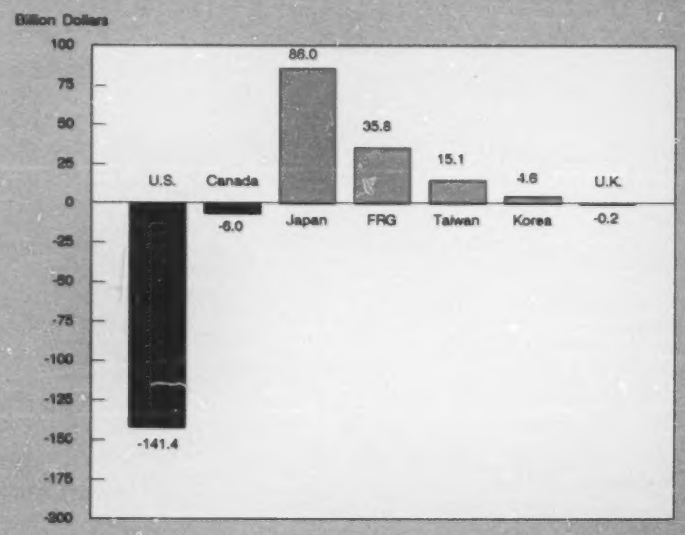


FIGURE 17
Current Account Balances, 1986

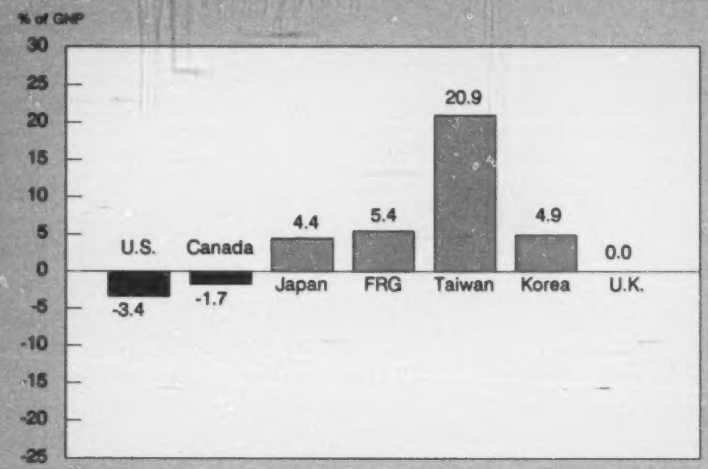
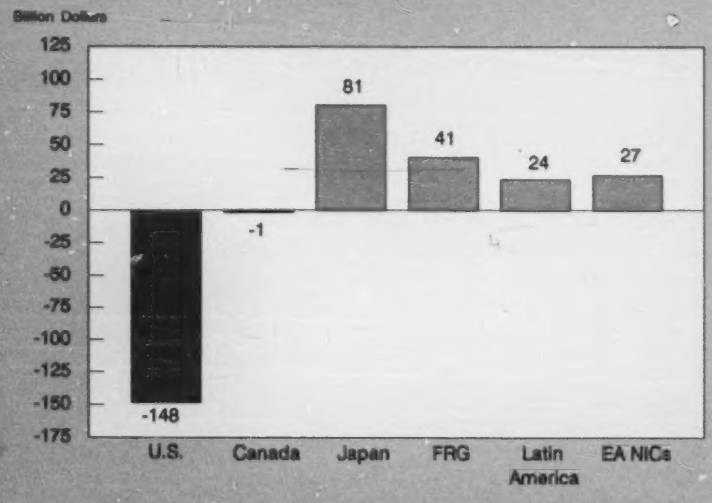


FIGURE 18
Changes in Current Account Balances of Selected Countries, 1981-86



imbalances with all of its major trading partners, which suggests that general movements in exports and imports in response to macroeconomic factors, not changes in bilateral trade relations, are responsible for deterioration of the U.S. international payments position. Japan, the largest U.S. supplier, contributes more than one-fifth of U.S.-manufactured good imports. The U.S. deficit in trade with Japan reached a record $68 billion in 1986, a 36 percent increase over the 1985 deficit, principally because of higher levels of automotive and high-tech product imports from Japan. Canada and West Germany, second and third most important suppliers of U.S. imports, account for 18 and 7 percent of total U.S. imports. U.S. trade with Canada recorded a deficit of $2 billion, due principally to items traded under the U.S.-Canada Automotive Products Free Trade Agreement and crude materials and fuels. The deficit for West Germany was $16.7 billion. East Asian NICs-- Taiwan, South Korea, Hong Kong, and Singapore--have also emerged as major U.S. import sources. The U.S. manufactures trade deficit with the NICs amounted to $35.7 billion, up 24 percent from the 1985 deficit.

FIGURE 16: Current account balances for the U.S. and major trading partners are illustrated.

FIGURE 17: The U.S. deficit of $141 billion in 1986 was equivalent to 3.4 percent of U.S. GNP. Japan, West Germany, Taiwan, and South Korea had complementing surpluses totalling an amount approximately equal to the U.S. deficit, but larger in comparison to their respective GNPs.

FIGURE 18: Intercountry comparisons of changes in current account balances over the 1981-86 period indicate that the U.S. deficit worsened by an amount equal to the gains in combined surpluses of Japan, West Germany, and the East Asian NICs. Such comparisons serve as a reminder that improvements in the U.S. current account deficit must come at the expense of major surplus nations. Policies will have to be adopted by the U.S. and other countries to gradually reduce payment imbalances in a manner

consistent with sustained growth in the world economy.

Causes of the U.S. Trade Deficit

Widespread deterioration in the trade balance is a result of macroeconomic developments in the U.S. and the rest of the world. Import growth has accelerated and export growth has stagnated. First, the U.S. experienced a significant decline in the price competitiveness of tradable goods industries with dollar appreciation between 1980 and early 1985 due in large part to capital inflows from Europe and Japan in response to high real interest rates in the U.S. relative to foreign rates. Growing U.S. budgetary deficits caused by Reagan Administration tax cuts and deficit-spending policies, tight fiscal policies in Europe, and the Federal Reserve's anti-inflationary monetary policy have kept U.S. real interest rates high. Dollar appreciation allowed foreigners to expand their share of the U.S. market and drastically reduced U.S. market shares abroad. Second, U.S. demand growth relative to output growth has outstripped demand and output growth abroad. Expansionary policies which lifted the U.S. out of recession in 1982 accelerated U.S. demand for foreign goods. Trading partners in surplus with the U.S. did not engage in expansionary policies to stimulate economic growth and raise their demand for U.S.-produced goods. Instead, growth in these countries was export-led, fueled by the U.S. economic recovery. Until other countries implement policies to generate growth internally, and as long as developing countries find it difficult to manage their external debt, weak foreign demand will limit expansion of U.S. export markets. The growing U.S. budget deficit continues to keep domestic demand growth high relative to output growth and upsets the U.S. investment-savings balance, thereby contributing to growth in the U.S. current account deficit.

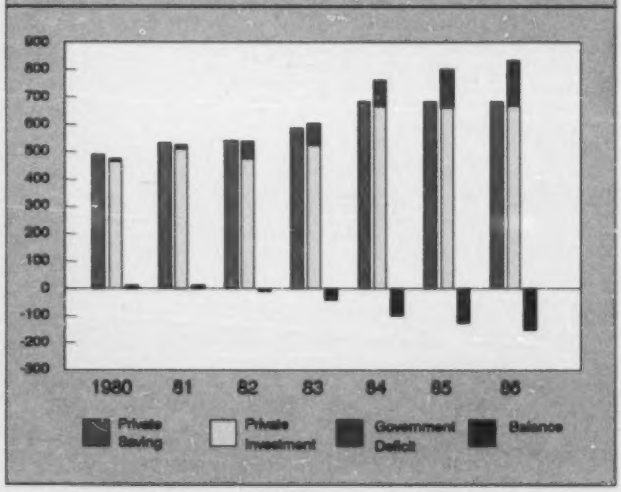
The inextricable link between the current account deficit and the government budget deficit can be viewed in a national income accounting framework. A nation's gross private savings, less its gross private investment, less its government budget deficit, equals its current account balance. According to this expression, a nation facing a current account deficit is not saving enough to finance its private investment and its government budget deficit. A current account deficit indicates a country is consuming, both publicly and privately, and investing more than it is producing. FIGURE 19: Since 1980, growth in the U.S. current account deficit has been associated with both an increase in the government budget deficit, and a narrowing in private savings relative to private investment. Eliminating the current account deficit will require the adoption of policies to reduce the government budget deficit and increase private savings relative to private investment. Finally, microeconomic factors which aggravate the deficit include an erosion of U.S. technological leadership, lagging United States productivity growth, and a growing notoriety for inferior product quality and customer service.

Requirements for Eliminating the U.S. Trade Deficit

Eliminating the U.S. current account deficit will require significant adjustments on the part of the U.S. and major trading partners. Massive dollar depreciation could be relied upon to shrink U.S. external deficits by shifting world demand toward U.S.-produced goods, but at a cost of increasing inflationary pressures at home and lowering real income growth abroad. Instead, other nations must generate growth internally to reduce their trade surpluses and boost United States exports of manufactured goods.

The President has proposed a package of initiatives designed to increase funding for basic and applied scientific research, reform federal regulations, and improve access for U.S. products in world markets. A greater effort must be made by the U.S. to eliminate the current account deficit. Domestic demand growth must be restrained relative to growth in real GNP, and national savings must increase relative to national investment. The U.S. must reduce budgetary deficits by controlling federal spending, which will dampen domestic demand growth, but need not significantly reduce GNP growth if stronger demand growth abroad and lagged effects of the recent dollar depreciation increase U.S. exports. Leading industrial nations must coordinate economic policies to foster growth in world demand with a smaller contribution coming from the U.S. and a larger contribution coming from surplus countries. If appropriate adjustments are made on the part of the U.S. and trading partners, less reliance will have to be placed on further dollar depreciation to restore U.S. competitiveness and improve the current account balance. □

FIGURE 19
The U.S. Saving-Investment Gap, 1980-86



ELIMINATING THE TRADE DEFICIT:
WHAT ARE THE OPTIONS?

by Charles B. Garrison

There is no easy remedy for eliminating the U.S. trade deficit. Solutions include changes in macroeconomic politics, not only in the U.S., but in other countries that are our major trading partners.

The current expansion of the U.S. economy, which began over five years ago, has been characterized by excellent performance in most respects. Employment, for example, has grown sharply, as reflected by a decline in the unemployment rate from almost 11 percent in late 1982 to less than 6 percent today. In addition, corporate profits, which rose sharply during the recovery, have remained at levels well above those prevailing during the 1981-82 recession.

But the overall favorable macroeconomic performance (reduced unemployment and inflation rate, increased output) has been confined to the domestic sector of the economy. Unfortunately, the U.S. foreign trade performance has deteriorated badly and has become a major source of concern.

The poor trade performance has been reflected in a startling increase in the U.S. trade deficit, characterized by rapid growth of imports and stagnating exports. The increase in the deficit is particularly disturbing for two reasons. First, future growth of output and incomes in the United States is threatened unless net foreign demand for our goods improves. Secondly, the U.S. finances its trade deficit by selling assets (U.S. stocks, bonds, and physical property) to foreigners. This practice is favorable in the sense that it channels savings into the U.S. economy, helping to finance U.S. investment (in new plants and equipment in the business sector and in new housing) at lower interest rates than would

UNITED STATES
THIS NOTE IS LEGAL TENDER
FOR ALL DEBTS, PUBLIC AND PRIVATE
B
B32449032G
WASHINGTON, D.C.
TWENTY

Productivity growth in U.S. manufacturing has been very strong since 1981-- 3.8 percent per year--well above the postwar average rate of 2.6 percent per year and the rate of 1.5 percent that prevailed during the period 1973-1981. Further, wage increases in U.S. manufacturing have been quite modest recently, with the result that unit labor costs have been held to low levels.

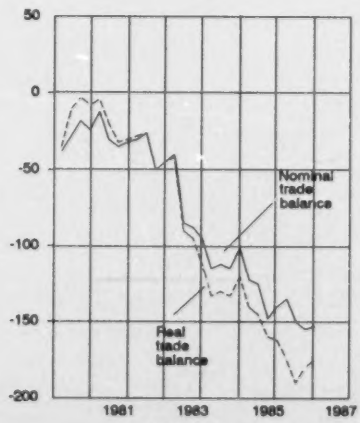
otherwise prevail; but it also implies that the United States becomes a debtor nation and will have to pay a portion of its future income to foreigners in the form of interest, dividends, and profits. This income would not be available to U.S. citizens, and consequently our standard of living would be lowered. It should be noted that some observers identify a favorable macroeconomic element associated with the trade deficit: rising imports have helped to hold down inflation rates and thereby have permitted demand-stimulus policies to be pursued for an unusually long interval.

Causes of Growth in the Deficit

The increase in the U.S. trade deficit (from less than $40 billion in 1980 to $150 billion in nominal terms in 1986 (see Figure 1) was due to differing national macroeconomic policies and macroeconomic performance. It seems evident that growth of the deficit was not due to such well-publicized structural culprits as (1) trade barriers imposed by other countries or (2) a decline in the "competitiveness" of the U.S. economy. This argument implies an optimistic view, since macroeconomic policies can be altered, while structural causes would be more resistant to change.

But what of structural forces such as restrictions imposed by Japan on imports of foreign goods? It is true that such restrictions might help to explain the low level of our exports to Japan, but these restrictions were in force even in the 1970s, and cannot provide much explanation for the growth of our trade deficit. Further, in keeping with the argument that the growth of the trade deficit is a macroeconomic phenomenon, the trade balance has worsened in almost all product categories and with almost all of the countries who are our major trading partners.

FIGURE 1
U.S. Trade Deficit
1980-86



Source: Edwin G. Dolan and David E. Lindsey, Economics, 5th ed. The Dryden Press, Chicago 1988.

What of the possibility that the cause of this broad-based deterioration is a decline in the industrial strength of the United States? Such a decline in world competitiveness could occur if output per worker per hour (productivity) lagged in the U.S. relative to other countries. But in fact, productivity growth in U.S. manufacturing has been very strong since 1981--3.8 percent per year--well above the postwar average rate of 2.6 percent per year and the rate of 1.5 percent that prevailed during the period 1973-1981. Further, wage increases in U.S. manufacturing have been quite modest recently, with the result that unit labor costs have been held to low levels. This favorable performance holds up even in comparison to other industrialized countries. According to the *1987 Economic Report of the President*, with 1980 = 100, the weighted average for unit labor costs was 116.3 for Belgium, Canada, Denmark, France, Germany, Italy, Japan, Netherlands, Norway, Sweden, and United Kingdom.

Exchange Rates and Competitiveness

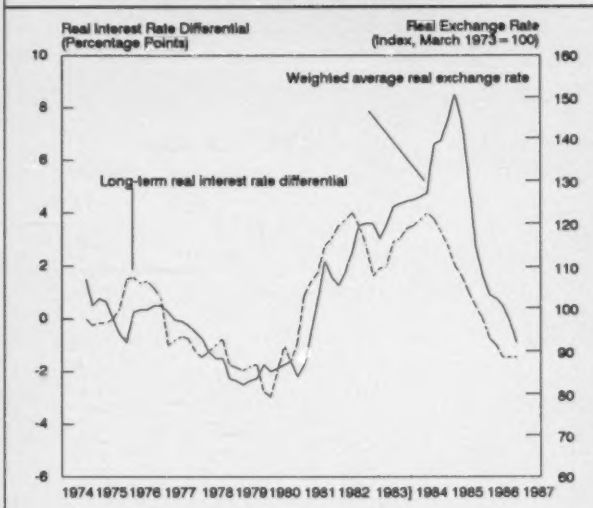
But despite the impressive performance in holding down unit labor costs, exchange rate movements drastically reduced the ability of U.S. producers to compete in world markets in the first half of the 1980s. Figure 2 traces the dramatic appreciation of the U.S. dollar that occurred from 1980 to 1985. The trade-weighted value of the dollar increased from 87.4 in 1980 to 156.5 in the first quarter of 1985. With respect to particular currencies, this meant, for example, that while the German mark exchanged for $0.551 in 1980, a mark could be bought for only $0.307 in 1985.1. The value of the Japanese yen fell from $0.443 to $0.388 during the same period and the U.K. pound from $2.326 to $1.115.

The result of such movements was that foreign goods became very attractive in terms of their

price in dollars to U.S. importers. And these exchange rate movements made U.S.-produced goods more expensive to foreigners, who had to give up larger and larger amounts of their own currencies to buy the dollars needed to pay for goods produced in the U.S.

The increase in the value of the dollar apparently was due mainly to an increase in interest rates relative to those in other countries. Such an interest-rate differential makes U.S. securities more attractive to foreigners, who then increase their demand for dollars in foreign exchange markets. This increase in the demand for dollars to buy dollar-denominated assets raises the exchange value of the dollar, as documented in Figure 2. The interest rate differential is measured as the difference between long-term interest rates in the U.S. and long-term rates in other countries. Interest rates are in "real" terms; that is, the real interest rate is equal to the nominal (market) interest rate minus the rate of inflation. Real interest rates fell in the U.S. in the late 1970s because the U.S. inflation rate rose more rapidly than nominal interest rates. As the figure shows, the result was a decline in the value of the dollar. The low value of the dollar during that period made U.S. exports less expensive to foreigners and substantially benefited many export-oriented United States industries.

FIGURE 2
Relationship of the Exchange Rate and the Interest Rate Differential



Source: Charles P. Thomas, "U.S. International Transactions in 1986," Federal Reserve Bulletin (May 1987):323.

But just as the weak dollar in the late 1970s helped to insulate U.S. producers from foreign competition, rising real interest rates in the first half of the 1980s caused an appreciation of the dollar so great that it overwhelmed rising productivity and wage restraint in the U.S. Thus, while unit labor costs rose more than 16 percent in 11 foreign industrial countries in terms of their own currencies, they fell by nearly 20 percent in dollar terms.

The rising real interest rate differential and the associated appreciation of the dollar were largely the result of macroeconomic policies pursued in the United States and in other major countries. In the U.S., restrictive monetary policy was pursued from late 1979 to late 1982--with only a brief interruption in the latter half of 1980. The restrictive monetary policy was the cornerstone of the successful effort to reduce inflation rates, and it operated by raising interest rates well above those in many other countries. Even after U.S. monetary policy turned stimulative in 1982, so that market interest rates fell, stimulative U.S. fiscal policy (in the form of major tax cuts) limited the extent of the decline in market interest rates. Meanwhile, macroeconomic policies followed by our major trading partners differed sharply from those pursued in the U.S. The major European countries relied more extensively on fiscal restriction than monetary restraint in their anti-inflation policies. As a result, the interest rate differential remained high even in 1983-85, although market interest rates were lower in the U.S. during that period than they had been in 1981-82.

As is now well known, the exchange rate of the dollar stopped rising in 1985 and has since fallen sharply (see Figure 2). The trade deficit, however, has been slow to respond, for three reasons. First, some foreign producers apparently cut profit margins in an effort to prevent a major rise in the dollar price of their goods. This was a feasible course of action, because they had been able to raise profit margins when the value of the dollar was high. Second, the value of the dollar has not declined very much against the currencies of some major trading partners, especially Canada, Korea, and Taiwan. These countries increased their share of the U.S. market in 1985 and 1986, while the shares of Japan and West Germany declined. Third, in terms of the *real* volume of physical goods, exports did begin to rise strongly and the real volume of imports to fall, as early as mid-1986. Keep in mind, however, that the *dollar* price of imports was rising sharply due to the depreciation of the dollar. As a result, the nominal value of imports continued to rise (see Figure 1); this is the J-curve effect at work.

Differing Rates of Economic Growth

A second macroeconomic force that contributed to the increase in the trade deficit was the faster rate of economic growth in the United States compared to other major industrial countries (see Table 1). The strong increase in incomes in the United States after the recession of 1981-82 permitted major growth in demand for consumer goods, and a significant fraction of this demand was channeled to imported goods. However, the four largest European countries experienced extremely sluggish growth in domestic demand,

Fiscal restriction, whether in the form of higher taxes or reduced government expenditures, would moderate domestic demand as well as reduce the demand for funds in the financial sector of the U.S. economy, thereby lowering U.S. interest rates further and exerting further downward pressure on the dollar.

and, accordingly, their demand for U.S. goods was sluggish. Even Japan, which had a 4.3 percent annual rate of growth of real GNP from 1982 to 1985, experienced a considerably lower rate of growth of domestic demand, only 3.1 percent. Domestic demand in these countries has been repressed as their governments have employed more restrictive fiscal and monetary policies since 1982 than has been the case in the U.S. These policies have succeeded in their anti-inflation objectives, but have further limited the growth of U.S. exports.

Developing Countries

Income and demand also have grown very slowly in the less developed countries, with the exception of Asia (see Table 2). As a result, these countries have reduced their imports not only from the United States, but also from other industrial nations. In 1981, developing countries purchased 41 percent of United States merchandise exports, but this share fell to 34 percent by 1985, as reported in the *1987 Economic Report of the President.*

The developing countries were weakened by the decline in prices of agricultural and other primary products during the recession in industrial countries of 1981-82 and the sluggish recovery in Europe and Japan. Further, the appreciation of the dollar increased the real burden of the dollar-denominated debt of many less developed countries. The ensuing cessation of lending flows to these countries drastically impeded their growth.

Macroeconomic Policy Coordination

If the increase in the trade deficit has been due to differing macroeconomic policies among the industrial nations, it follows that the route to reducing the deficit lies in altering these policies. In particular, since the increase in the deficit has been characterized by real domestic demand growth exceeding real GNP growth in the U.S., a successful policy regime must be aimed at reversing that relationship. Further, this would mean that Japan and the large western European economies need to increase their domestic demand *faster* than their real GNP.

TABLE 1
Growth in Real Domestic Demand and Real GNP
in Major Industrial Countries, 1970-86
(Average Annual Percent Change)

	1970 to 1980		1980 to 1985		1982 to 1985		1985.3 to 1986.3	
Country	Real Domestic Demand[1]	Real GNP[2]	Real Domestic Demand[1]	Real GNP[2]	Real Domestic Demand[1]	Real GNP[2]	Real Domestic Demand[1]	Real GNP[2]
United States	2.5	2.8	3.4	2.4	5.6	4.2	3.6	2.3
Canada	4.9	4.6	2.1	2.5	4.2	4.2	3.3	3.5
Japan	4.2	4.7	2.8	3.9	3.1	4.3	3.8	2.3
France	3.7	3.6	1.2	1.2	0.8	1.2	n.a.	n.a.
Germany	2.7	2.7	0.2	1.3	1.9	2.4	3.6	2.3
Italy	2.9	3.1	0.4	0.9	1.5	1.7	4.5	3.0
United Kingdom	1.7	1.9	1.9	1.9	3.1	3.1	3.3	2.0

n.a. not available.
1. Domestic demand is the sum of personal consumption expenditures, gross private domestic investment, and government purchases of goods and services.
2. Data for Canada, France, Italy, and United Kingdom are real GDP.
Source: *Economic Report of the President, 1987*, p. 104.

TABLE 2
Real GNP Growth in Developing Countries
(Average Annual Percent Change)

Region	1970 to 1980	1980 to 1986	1980 to 1983	1983 to 1986
Western Hemisphere	5.8	1.0	1.1	3.2
Africa	3.7	1.0	0.3	1.7
Middle East	6.4	0.4	0.6	0.1
Asia	5.2	4.7	5.2	4.1

1. Preliminary estimates.
Source: *Economic Report of the President, 1987.*

One possible course of action would be a policy designed to reduce consumption spending in the United States. Some analysts have recommended this approach. However, there is a danger that a decline in consumer spending (which, after all, would reduce demand for domestic as well as imported goods) would spark a recession. An example of a policy designed to lower consumption would be a national tax on consumer goods and services, which would constitute a restrictive fiscal policy by the U.S. government. But better policy alternatives may exist.

It appears that the most desirable macroeconomic policy for the U.S. would be a shift in the policy mix. Such a shift would involve a movement toward a more stimulative monetary policy and a less stimulative fiscal policy. Monetary stimulus by the Federal Reserve would tend to lower interest rates, thereby keeping domestic demand strong, and would also keep the exchange rate of the dollar low, thereby increasing exports and reducing imports. Fiscal restriction, whether in the form of higher taxes or reduced government expenditures, would moderate domestic demand as well as reduce the demand for funds in the financial sector of the U.S. economy, thereby lowering U.S. interest rates further and exerting further downward pressure on the dollar. The net outcome should be that the growth in demand for U.S. goods in the future would shift toward a greater share for net exports and a smaller share for domestic consumption and government purchases. Thus the goal would be to shift the mix of demand for U.S. goods, not to reduce demand.

The most desirable macroeconomic policy for Japan and the European industrial countries would involve stimulating their own domestic demand, which would raise incomes in those countries and increase the demand for U.S.-produced goods. Many European countries have been practicing fiscal austerity for some time; the potential exists for tax cuts to stimulate their consumption spending. In the case of Japan, elimination of barriers against the housing industry could shift some of that country's impetus from export-led growth to domestic demand. The associated rise in Japanese incomes would stimulate U.S. exports to Japan.

With regard to the exchange rate of the dollar, the combined effect of these policies would be to reduce further the interest rate differential and therefore to exert a modest amount of further downward pressure on the dollar. This too seems desirable. However, we need to remember that a weak dollar raises the dollar price of imports and raises the inflation rate in the U.S. Thus the policies recommended here do not rely *exclusively* on further depreciation of the dollar.

Finally, the plight of the less developed countries needs to be addressed. Faster growth in the industrial nations will help (by increasing demand for primary commodities produced in the LDCs), but the developing countries' access to credit also needs to be restored. This would restore inflows of capital needed to finance investment projects in the LDCs. While these developments obviously would benefit the developing countries themselves, they would also provide a larger market for the exports of the United States and the other industrial nations.

Summary

The increase in the U.S. trade deficit during the first half of the 1980s was due to the macroeconomic policies followed in the U.S. and other industrial nations. In particular, the decline in international cost competitiveness in the U.S. was due to the rise in the exchange rate of the dollar and to slow economic growth in some countries that are major markets for U.S. exports. These developments were due to differing macroeconomic policies in the U.S. and other nations, not to low productivity growth or excessive wage increases in the U.S. Accordingly, elimination of the U.S. trade deficit will require the implementation and harmonization of new macroeconomic policies in the U.S. and in the countries that are our major trading partners.□

A SLOW LEAK: EFFECTS ON THE U.S. OF SHIFTS IN INTERNATIONAL INVESTMENT

by Niles C. Schoening

The U.S. vulnerability to shifts in capital flows has been aggravated by the rapid deterioration in the United States current account balance and international investment position. To reverse that situation, the U.S. must expand exports without causing serious side effects.

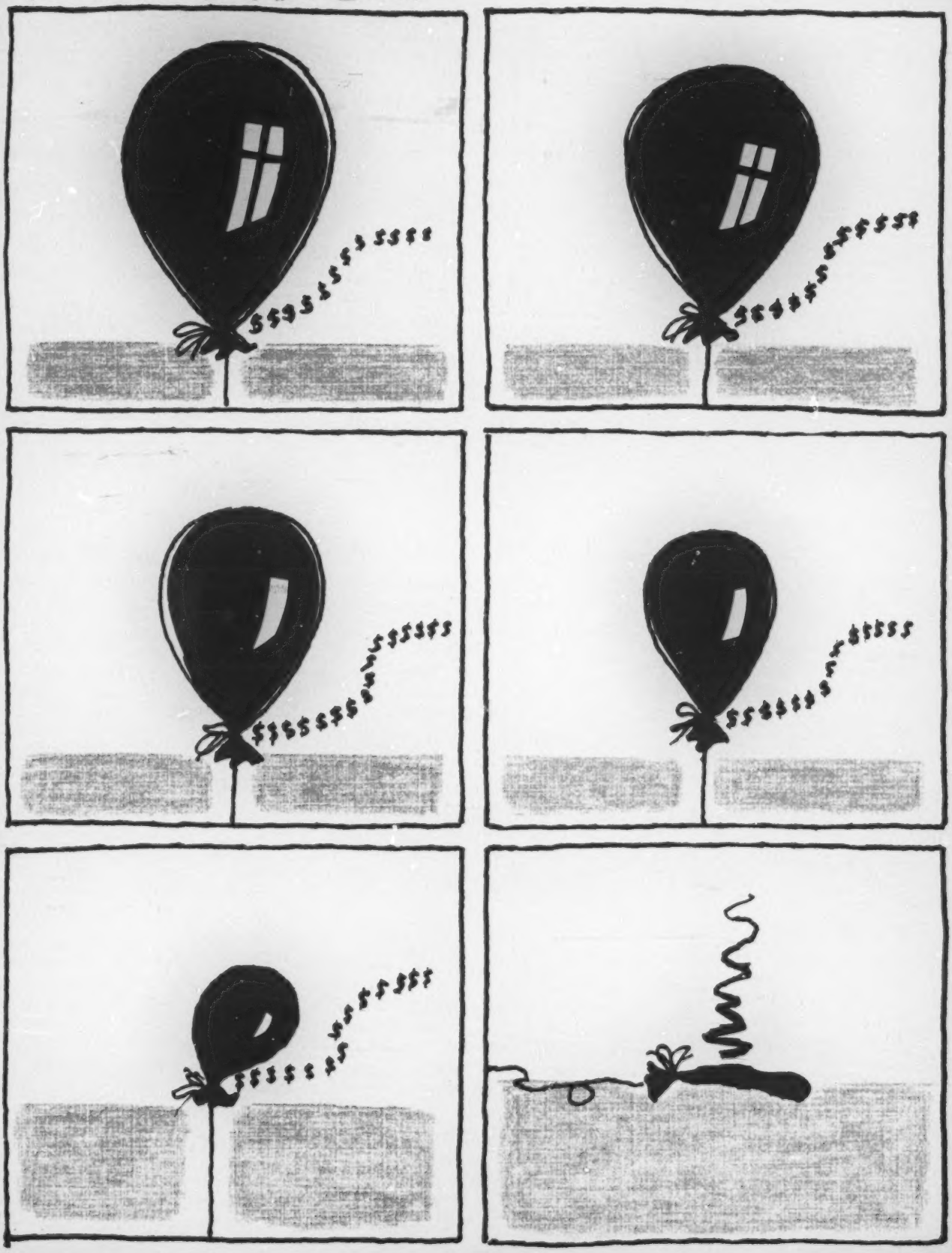
How international investment and capital flows affect the U.S. balance of payments is an issue that has become increasingly important as international capital markets are operating more efficiently around the world. The U.S., now an open economy, is consequently highly vulnerable to shifts in capital flows into and out of the country. This vulnerability has been aggravated by the rapid deterioration in the U.S. current account balance and international investment position over the past five years. The United States current account went from a slight surplus in 1981 to a record-breaking deficit of $159 billion in 1987. The nation's international investment position also reversed, plummeting from a small surplus in 1984 to an estimated $415 billion deficit in 1987, as shown in Figure 1 on page 23. This graphic clearly illustrates the seriousness of our present international trade problem.

Current Account Transactions

Transactions between United States residents and foreigners which involve the sales or purchases of goods and services are recorded in the current account. Also included are interest, dividends, rental, and royalty payments (investment income) paid to or received from foreigners. Finally, unilateral transfers or gifts are added in. For the United States, the most important unilateral transfers are foreign aid payments and transfers of military equipment to foreign governments. The current account sums up all current transactions between United States residents and foreigners.

A SLOW LEAK ©1988

Niles C. Schoening



The official transactions account shows the foreign transactions of the central bank (U.S. Federal Reserve) and the U.S. Treasury. These authorities hold the nation's official international reserve of gold and foreign exchange and may buy and sell it in the open market and borrow or loan it to foreign central banks. Official transactions provide the balancing mechanism in the balance of payments if the current account balance and the capital account balance do not exactly offset each other.

The balance of payments, however, includes other types of transactions besides those found in the current account, and they are listed either in the capital or official transactions accounts. Strictly financial transactions are tabulated in the capital account. Capital inflows and outflows are recorded and distinguished by type. Short-term capital transfers are defined as ones which involve financial instruments having maturities of less than one year. If a Japanese bank buys commercial paper from a U.S. corporation, the transaction is considered a short-term capital transfer into the U.S. When a U.S. corporation opens a bank account in London, it is a short-term capital transfer out of the U.S. Today there are enormous numbers of short-term capital transfers between countries, so most transactions in the capital account are of this type. Since these transactions involve highly liquid financial instruments with short-term maturities, they tend to be highly volatile and very responsive to minor changes in yields or exchange rates.

Portfolio Investment

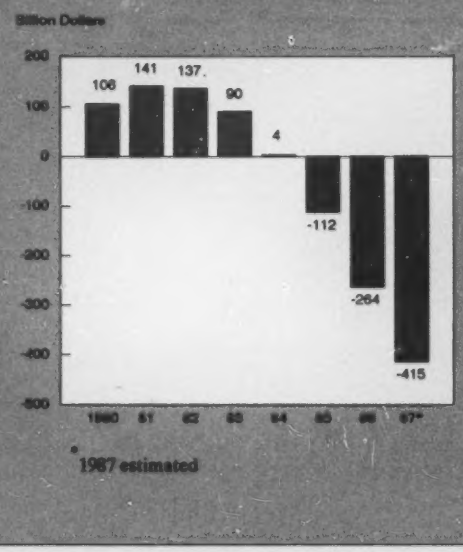
The second type of capital transfer is portfolio investment. All transactions between U.S. residents and foreigners which involve long-term financial instruments such as equities, bonds, and notes that do not give investors effective control over the issuing entity are considered portfolio investment. If a Japanese pension fund manager purchases common stock on the New York Stock Exchange and this purchase does not result in the fund's having effective control over the firms in which the investment was made, it is considered a portfolio investment and is recorded in the capital account as an inflow of capital. Similarly, a purchase of common stock on the Tokyo Exchange by a U.S. company is considered an outflow of capital.

Direct investment, the third type of capital transfer, is defined as investment in enterprises located in one country but effectively controlled by residents in another country. This usually involves investment in branches and subsidiaries abroad by domestic parent companies. If a Japanese firm builds a subsidiary in the U.S., the firm has made a direct investment and its transaction is recorded as an inflow of capital. If a U.S. company buys a building in Tokyo, it is counted as a direct investment and an outflow of capital. Since direct investments involve the purchase of buildings, land, and production facilities, it is the least volatile component of the capital account.

The official transactions account shows the foreign transactions of the central bank (U.S. Federal Reserve) and the U.S. Treasury. These authorities hold the nation's official international reserve of gold and foreign exchange and may buy and sell it in the open market and borrow or loan it to foreign central banks. Official transactions provide the balancing mechanism in the balance of payments if the current account balance and the capital account balance do not exactly offset each other. For example, if the U.S. net current account balance is a negative $20 billion and the net capital account balance plus errors and omissions is a positive $18 billion, the U.S. Federal Reserve must have supplied the additional $2 billion in foreign exchange needed for the balance of payments to balance, either by selling it in the foreign exchange market from its own portfolio or borrowing it from other central banks or the International Monetary Fund.

The U.S. has experienced huge current account deficits for the past five years. These deficits have been financed by equally large inflows of capital recorded in the capital account. To illustrate how the U.S. is now financing its deficit, assume a U.S. resident purchases a car imported from Japan. When the purchase is made, a dollar-denominated bank account is transferred, through financial intermediaries, from the resident's ownership to a Japanese automobile manufacturer. This transaction appears as a short-term capital inflow (a foreign company now owns a U.S. bank account). At this point the Japanese firm can initiate a number of financial transactions. It can use its bank account to buy short-

FIGURE 1
U.S. International Investment



term financial instruments in the U.S. money market (it is still a short-term capital transaction); to purchase common or U.S. corporate bonds (now a portfolio investment); or buy equipment in a subsidiary it controls in the U.S. (a direct investment). In each of these cases the Japanese firm has essentially loaned the dollars in its bank account to U.S. residents. It now has a new claim against future U.S. income. The future income it earns on its new investment is recorded as an outflow in the current account when it is paid out and adds to the existing current account deficit.

The Japanese firm also has another alternative. It can sell its bank account to another party who wishes to import goods and services from the U.S. In this instance the dollars are not loaned but used to finance an export from the U.S. so the bank account returns to U.S. ownership in the long run. Hence there is no long-term effect on the current account because the export transaction exactly balances the earlier import transaction. If, however, the demand for U.S. exports is not great, there may be no buyer for the Japanese firm to sell to, so it must invest the dollars in the U.S. instead.

Effects of Direct Investment

The effects of a direct investment on the current account are somewhat more complicated than for portfolio or short-term capital investment. For example, assume a Japanese manufacturer uses his dollar balance to build a branch plant in the U.S. If the dollars are entirely spent in the U.S. for American-made equipment, there is no initial effect on the current account. However, if equipment is imported from Japan, the current account deficit will temporarily worsen. The current account deficit also will grow if, after start-up, inputs are foreign-supplied and outputs are entirely sold in the U.S. market. If the output of the new plant replaces goods which were previously imported or if most of it is exported, the direct investment will improve the current account balance. In the long run, however, this improvement will likely disappear for two reasons. First, the Japanese owners will begin to repatriate part or all of their profits. More importantly, incomes of American workers will increase as a result of the opening of the plant and they will use the income to purchase more imports. To summarize, a persistent current account deficit must be financed through an inflow of capital. This capital is invested in either short- or long-term tangible or intangible dollar-denominated assets located in the U.S. This capital inflow increases the claims foreigners hold on U.S. residents and requires a future stream of U.S. income to pay interest, dividends, rent or repatriated profits. The resulting outflow further adds to the current account deficit. The only way to break this cycle is to invest the capital in productive assets which increase exports or reduce the volume of imports or both.

Like most developing countries today, the U.S. was a debtor nation during the early years of its history. Until 1914, European countries invested heavily in the U.S. In 1789 the newly created U.S. owed Europe about $60 million. By 1914 this figure had increased over 100 times. Much of this imported capital was used productively to build canals and railroads, open new areas to agriculture and start manufacturing enterprises. Although the U.S. was the largest debtor country in the world by the turn of the century, the debt service became less and less burdensome as the economy and volume of exports from the U.S. expanded.

This capital inflow ceased abruptly during World War I when European combatant nations, also America's major creditors, were forced to liquidate their investments to pay for arms and provisions purchased from the U.S. What had been a capital inflow became an outflow as U.S. investors made loans to European governments and businesses after the war. By 1920 the U.S. had replaced England as the world's major creditor nation, and this situation accelerated during World War II, when Europeans once again had to borrow heavily in the U.S. to pay for war materiel. At the end of the war the U.S. dollar was the strongest currency in the world, and the U.S. possessed more than one-half of the world's gold reserves.

The pivotal position of the U.S. in the global economy was acknowledged at the World Monetary Conference held in Bretton Woods, New Hampshire, in 1944. Under the Bretton Woods Agreement the U.S. role was to maintain the gold convertibility of the dollar. Other signatory nations would maintain the convertibility of their currencies into dollars at a fixed rate of exchange. That is, Great Britain, France and the other signatory nations agreed to keep the price of their currencies the same in terms of dollars in the foreign exchange market. Since the dollar was the only currency exchangeable for gold, it became the reserve currency or the currency that other countries were willing to hold in lieu of the gold. In order for the Bretton Woods system to work, there had to be a supply of dollars outside the U.S. for other countries to hold. This increase in dollar availability was accomplished through a massive capital transfer called the Marshall Plan. The Marshall Plan was followed by systematic and growing foreign aid, first to Europe and later to Third World nations.

In addition to the capital outflow of federal foreign aid payments was an increase in private investment spearheaded by American multinational corporations. During the 1950s and 1960s U.S. multinationals began to expand aggressively overseas. What had been a dollar shortage right after the war became a dollar glut by 1960. This large outflow of capital from the U.S. now began to undermine the Bretton Woods System because the value of dollar holdings beyond United States borders exceeded the value of U.S. gold supplies at the agreed-upon rate of exchange of $32 dollars to an ounce of gold. The U.S. government tried numerous approaches to stem the outflow during the ensuing decade, but the outflow continued unimpeded. Finally the Bretton Woods Era came to an end in 1971 when the U.S. unilaterally declared that the dollar could no longer be converted into gold. With the destruction of the Bretton Woods system (where governments had guaranteed exchange rates between currencies), exchange rates were now free to fluctuate and governments could

Although the U.S. was the largest debtor country in the world by the turn of the century, the debt service became less and less burdensome as the economy and volume of exports from the U.S. expanded. This capital inflow ceased abruptly during World War I when European combatant nations, also America's major creditors, were forced to liquidate their investments to pay for arms and provisions purchased from the U.S.

choose whether or not to intervene in foreign exchange markets.

U.S. policy toward the value of the dollar during the 1970s was essentially to allow the dollar to float freely against other currencies. The policy appeared to work well until 1979, when the dollar fell precipitously in the market under the impact of global oil shortages and accelerating U.S. inflation. Because of the fall of the dollar the Federal Reserve was forced to drastically reduce the growth of the money supply to push up domestic interest rates and make dollar-denominated assets more attractive in world capital markets. This situation caused dramatic increases in U.S. interest rates and a slowdown in world economic growth during the period 1980-1982. The Fed's move had the desired effect, and the dollar quickly recovered while U.S. rates of inflation began to decline.

However, the maneuver also inadvertently precipitated another crisis. Third World countries, especially Mexico, Brazil and Argentina, which had been the recipients of massive loans from U.S., European, and Japanese banks in the 1970s, could no longer support their burdens of foreign debt at much higher interest rates and threatened to default. The "international debt crisis" led to a drastic decline in international lending by U.S. banks, and this outflow of capital, which had been an almost continuous feature of the U.S. balance of payments since 1945, ceased in 1984 and reversed in 1985. In 1987 the net inflow of capital into the U.S. was estimated at $415 billion. Most of this capital came from countries such as West Germany and Japan, which had been building up large trade surpluses with the U.S. for many years.

The higher value of the dollar in the early 1980s led to a loss of foreign markets for U.S. goods, an upsurge in demand for imports, and a rapid deterioration in the U.S. current account balance. This had to be financed by an inflow of capital. Whether this imbalance was primarily caused by a dramatic increase in the demand for imports by Americans or by the sharp growth in demand for dollar-denominated financial assets by foreigners remains the subject of considerable debate.

Normally, imbalances in the current account are thought to cause imbalances in the capital account. If for several years a country consumes and invests more than it produces and saves, it must import capital from the rest of the world unless its earnings from investments made in earlier years are sufficient to support the shortfall in the merchandise and services trade balances. In this way a shortfall in the current account, caused by an increase in the demand for imports, causes a surplus in the capital account for an inflow of capital.

However, at times the direction of causation may, in fact, be reversed and run from the capital account to the current account. If U.S. interest rates are quite favorable compared to the ones prevailing elsewhere, and the dollar is appreciating in value, there is an increase in the demand for dollar-denominated assets by foreigners. The increase in demand causes a large inflow of capital which accelerates the growth of the U.S. economy and leads to a surge in the demand for imports. This capital inflow, resulting from a change in foreign perceptions of the value of U.S. financial assets, indirectly causes the current account deficit, rather than an increase in demand for imports by Americans.

Undoubtedly both of these phenomena were at work to worsen the U.S. trade balance after 1982. Until 1985 U.S. interest rates were high and the dollar was appreciating on foreign exchange markets. There also was a growing supply of new dollar-

For the first time in 70 years, income received by U.S. residents from overseas investments during the third quarter of 1987 was exceeded by the amount U.S. residents paid out to foreign investors. This investment income deficit will add directly to future current account imbalances. The resulting payment outflow represents a loss to current consumption and saving.

denominated securities on the market because of a growing federal budget deficit and a rapidly expanding United States economy. Similarly, the high dollar caused an upsurge in the demand for imports, and until recently, a decline in the demand for U.S. exports.

Regardless of the main cause of the huge inflow of capital that has occurred over the past four years, there will be two negative long-term consequences for the United States economy. First, the United States has, once again, become a net debtor nation. For the first time in 70 years, income received by United States residents from overseas investments during the third quarter of 1987 was exceeded by the amount United States residents paid out to foreign investors. This investment income deficit will add directly to future current account imbalances. The resulting payment outflow represents a loss to current consumption and saving. It means that the United States will have to export even more in the future, not only to support current needs for imports, but also to pay the debt service on funds borrowed to pay for past imports.

Just as the Europeans did in the last two world wars, the U.S. may have to liquidate overseas investments either to maintain current levels of consumption at home or pay off previously incurred international debt. The recent reversal in our international investment position could have a long-term snowballing effect by adding to the difficulty of achieving a balance in the current account at some point in the future.

Perhaps the most serious long-term issue facing the U.S. is the increasing vulnerability of its domestic economy to external shocks. Having lost the cushion that overseas investment income gave to the current account balance, the nation will realize the full effects of an increase in oil or other import prices immediately, and the United States trade position will worsen. Further, any change in domestic economic policies are considerably constrained because of the reversal in the United States external debt position. The growing interdependence of global financial markets was amply demonstrated during last October's stock market crash. Any miscalculations by United States monetary authorities will now be quickly translated around the world and could have disastrous consequences for the global economy.

In short, we are now more than ever dependent on the perceptions of overseas investors, and this situation limits the Federal Reserve's ability to adjust monetary policy to meet purely domestic economic goals.

In the long run the only viable solution to the nation's international trade problem is to increase exports. This can be accomplished only through improvements in productivity. That is, the United States economy must produce more for export each year and still have enough production left over to satisfy domestic demand. For if productivity is not improved, higher levels of exports must come from current domestic consumption. Encouraging foreign investment in the United States also will help, but only if those investments are targeted at improving the nation's current account balance. The key to reversing the recent deterioration in the nation's international trade position is to expand exports rapidly without lowering the standard of living for American consumers or seriously harming the economies of our trading partners.□

THE U.S. MARKETPLACE AND FOREIGN COMPETITION IN PRODUCT QUALITY: 1961 TO 1985

by David J. Faulds

Increased competition from foreign firms selling high quality products has eroded the profits and market position of many domestic consumer goods manufacturers. Finding a way to improve product quality is imperative to helping the U.S. amend its position in the international marketplace.

The competitive climate in international markets during the last two decades has engendered a renewed interest in product quality. Because foreign competition has made significant inroads into many domestic consumer product markets, product quality has become a matter of critical concern to U.S. manufacturers. Academic studies indicate that a high relative quality position is related to high levels of corporate profitability, low relative costs, and high market share.

Although product quality is now recognized as an important factor in determining national competitiveness, virtually no empirical research has been conducted on measuring the "objective" quality levels for products manufactured by other nations. The University of Tennessee's College of Business Administration is involved in an extensive research program that focuses on the strategic importance of product quality in international markets. As part of this research program, the author has compiled the International Product Quality Database (IPQD), which contains objective quality scores, price, market share, promotional expenditures, and distribution information for over 750,000 consumer products sold worldwide.

By using the IPQD we were able to test empirically three hypotheses that have recently received considerable attention in the popular business press and academic literature. These hypotheses relate to the relative quality levels of the products

manufactured in seven developed countries: Canada, England, France, West Germany, Japan, Sweden, and the U.S. The study is intended to complement traditional, survey-based research involving international quality comparisons. Most published studies deal with the "made-in" issue that examines the perceived quality of products as a function of their country of origin.

Present research employs a quality index based on reports published by automobile testing organizations, engineering associations, consumer product testing agencies, government bureaus, and independent product testing laboratories. Our empirical results will complement those that use surveys of perceived quality and management assessment techniques, e.g., PIMS (Profit Impact of Market Strategy). A wide variety of product classes and countries is included in the present research, and the IPQD is longitudinal as well as cross-sectional. Therefore, the results of the study present a more accurate analysis of the intensity in quality competition that has taken place in the U.S. marketplace from 1961 to 1985.

In the study, three hypotheses are used to explain the aspects of product quality:

Hypothesis 1: From 1961 to 1985, the quality of U.S. products has decreased compared to foreign manufacturers.

Hypothesis 2: Among the seven countries included in this investigation, consumer products from West Germany, Japan, and Sweden are of higher relative quality than those from the United States, which are, in turn, of higher quality than products from Canada, France, and England.

Hypothesis 3: The quality of U.S. products is lower than that of Japan's products in the categories of calculators, cameras, radios, stereos, and TVs.

International Competitiveness in Product Quality

Hypotheses 1 through 3 address two aspects of product quality: changes over time between U.S. and foreign products and cross-sectional quality differences among products from seven nations. The literature suggests that the most dramatic change in product quality has come from Japanese manufacturers, whose products in 1961 were considered shoddy and imitative, but in the ensuing 25 years, the Japanese have engineered a remarkable turnaround in product quality. The forces at work influencing the quality of products from Japan, as well as from the U.S., West Germany, and other countries, can be broadly classified as legal, economic, cultural, and management/labor forces, as shown in Table 1. Elements are marked with a positive or negative sign, depending on their influence on product quality. A more detailed discussion of these forces organized by country follows.

Japan

The dramatic turnaround in Japanese quality is considered a result of what Robert Hayes and Steven Wheelwright call a "complex, all-encompassing, interacting system" in their book, *Restoring our Competitive Edge* (1984). This system involves all levels of management and labor as well as legal and cultural influences. The Japanese Ministry of International Trade and Industry (MITI) rigidly enforces legal standards and inspection practices for all exported goods. Hayes and Wheelwright claim:

> *. . . This is so important . . . because high quality . . . requires the creation of a complex, all-encompassing, interacting "system." Developing such a system requires a long-term, uncompromising top management commitment. Again and again in Japan we heard the terms "quality consciousness" and "quality mentality," as Japanese managers struggled to explain how they achieved high quality. The Japanese have taken the familiar American slogan, "You don't inspect quality into a product; you have to build it in," one step further: "Before you build it in, you must 'think it in.'"*

The Japanese "think quality in" by detailed preplanning, extensive worker training, developing a conducive work environment, managing long-term commitments with suppliers, and completely embracing Philip Crosby's "zero-defects" manufacturing philosophy. Lifetime employment arrangements for male Japanese workers and never-ending supplier contracts mean that all parties in the vertically integrated production and quality control process are committed to the same objectives and are willing to work together to achieve these objectives. The cultural aspects of meticulous behavior and social, rather than individual ethical standards, also provide a receptive context for economic practices that enhance the quality of products from Japan.

West Germany

For its size, West Germany is the most successful exporting country in the world, the bulk of its exports being automobiles and industrial machinery. Hayes and Wheelwright explain:

> *At the very least, the German obsession with neatness and meticulousness leads to the well ordered workplace and to a constant concern with Grundlichkeit--getting everything "just right"--on the technologically complex manufactured goods which form the foundation of German industrial strength.*

These authors pinpoint the German psychological propensity to feel intense competitive pressure, their need to respond to this pressure, their apprentice system, their long-term orientation, and their commitment to customers.

England

In a detailed study of German versus British productivity, Daly, Hitchens, and Wagner (National Institute Economic Review, Feb. 1985) examined worker training and qualifications, technological sophistication of product machinery, and quality of raw materials. Two-thirds of all German youths are trained to craftsmen's standards, as opposed to only one-third in Britain. German plants use computer-controlled machines nearly twice as much as British plants, and the reject rate for supplier parts is ten times greater, on average, in British plants than in German counterparts. The authors also found that

shop-floor personnel strongly influence the quality of manufactured products and found that "to organize production efficiently and to produce goods that are preferred for their quality, a technically qualified foreman (is) highly desirable." They added:

> *The clearest differences were at the foreman level. In fourteen of the sixteen British firms we visited, the production foremen had acquired their positions purely as a result of experience on the shop floor . . . ; in only two cases had they served an apprenticeship. In contrast, German production foremen in all sixteen firms had passed examinations as craftsmen; thirteen had also acquired the higher certificate of Meister (master craftsman), and the remaining three had undergone additional training towards that qualification but had not yet passed their tests.*

TABLE 1
KEY FORCES DRIVING PRODUCT QUALITY IN SEVEN NATIONS*

	ECONOMIC	CULTURAL	LEGAL	MANAGEMENT/LABOR	EDUCATIONAL
CANADA		–individualistic orientation		–Taylorism[1] –adversarial relationship –strong labor –government labor center	
WEST GERMANY	+high technology +WWII	+intensely competitive +grundlichkeit[2] +long-term outlook +high status of engineers	+codetermination legislation	+apprenticeship system +fostering of management through technological strength +long-term orientation	+apprenticeships +absence of professionalism
FRANCE	+modern technology +declining hours –falling R&D +increasing competition	–emphasis on variety, design & selection –unreliable +worker dedication and pride	+codetermination legislation –nationalizations (loosely)	–increasing labor strength	+technical centers and vocational institutes
JAPAN	+life-long employment +long-term supplier contracts +high technology +high production +WWII +MITI support[3]	+societal orientation +government/business cooperation +long-term outlook +quality revolution	+rigid government standards and inspection of all exports +joint business/ government R&D	+quality control circles +preplanning all components of system +long-term orientation +we = all employees, them = defects	+strong science +shop-floor experience
SWEDEN			+codetermination legislation	-souring relations -turnover and absenteeism +better working conditions modified Taylorism	+apprenticeships +technical centers and vocational institutes
ENGLAND	+government-financed R&D –weak technology –low productivity	–professionalism –low status of production	–weak standards	–little codetermination modified Taylorism –very strong labor –adversarial relationship	–professional schools –weak apprenticeship –weak science
UNITED STATES	–profit center, ROI orientation –aging capital equipment –falling R&D –the marketing concept +strong technology +high productivity	–individualistic orientation –professionalism –low status of production -short-term outlook	–protective tariffs –price supports –no joint R&D allowed +gov't support to increase productivity	–guaranteed wage/ unionization –we (management) vs. them (labor) –low codetermination –Taylorism	–weak science –weak apprenticeship

* Positive and negative signs represent influence on product quality.

1. Principles of scientific management pioneered by Frederick W. Taylor.
2. Meticulous attention to detail.
3. Ministry of International Trade and Industry.

United States

Unfortunately, there seems to be a consistent lack of quality among domestic consumer products. Commenting on David Garvin's comparison of U.S. and Japanese air conditioner manufacturers, K. R. Andrews, the editor of *Harvard Business Review*, remarked in October of 1983:

> *That in so straightforward a manufacturing process in which so much U.S. experience has been accumulated, such shocking and, so far as I can see, irrefutable evidence of mediocre American manufacturing performance has been discovered, means that our quality problem must be worse than we thought. The implication is that the top management of American firms has not yet succeeded in attacking the costliness of on-line and in-service defects, ill-considered design changes, union-contract constraints, disaffected first-line and middle management, and absenteeism.*

Some suggest that American managers have widely adopted a customer orientation approach, thereby depressing innovation and creating a technological gap between the U.S. and aggressive foreign competitors. Protective trade barriers may also decrease competitive instincts and research and development spending in U.S. firms.

Labor and management in the U.S often appear to exhibit an "us-versus-them" antagonism; in West Germany, in Sweden, and especially in Japan, the view is that "them" means product defects that are the enemy of the vertically integrated "us" described earlier. Some researchers suggest that professional managers with no production-related or technical skills cause production inefficiencies and quality defects in both U.S. and British plants. Whereas a typical British or U.S. manager has an M.B.A., his German counterpart generally has an engineering degree and production experience. Thus, career discontinuity may be evidenced in relations between U.S. managers and members of their labor force.

Another obstacle to the quality movement in the United States is the tradition of scientific management pioneered by Frederick W. Taylor. Taylor's principles resulted in a variety of specialists such as industrial engineers, personnel departments, and quality control departments that separated planning from execution. This system was embraced in the United States and Canada because it increased productivity, but it was only cautiously and selectively applied in Europe.

France

Philippe Cattin et al. (1982) found cultural attitudes among a sample of French purchasing directors similar to those of purchasing directors in the U.S. The directors suggested that French products would be less reliable than products from Japan and Germany, and that French manufacturers tend to emphasize exclusive designs, variety, and selection over high quality. The French, like U.S. citizens, tend to have an individual orientation and an ethnocentric view which favors a less rigid approach than the vast, interrelated, quality control programs of the Japanese model. The quality of French products may be affected by the fact that much of France's major industry is nationalized and that French labor has a major role in business decisions, a result of codetermination legislation. For example, the decreased power to fire employees may lead to lower quality products. However, others suggest that labor is much weaker in France than in Britain, since only 20 percent of the French labor force is unionized. Because unions have been known to balk at quality improvement programs, it is possible that the strong labor movement in Britain has deterred improvement programs considerably more than the weaker movement in France. Yet, the probability of high quality of imported French products is enhanced by the French government's strict standards for exports.

Sweden

Of the four areas reviewed in Sweden in Table 1, the one receiving the most attention in published literature is management/labor relations. In durable goods manufacturing, Sweden has ridden a roller coaster upward, from the passage of the labor-management Saltojobaden Agreement in 1938, peaking in the late 1940s and then spiralling downward. By the late 1950s, manufacturing conditions had deteriorated, chiefly because of monotonous work practices created via the application of Tayloristic principles. Turnover was as high as 50 percent in many manufacturing plants, and absenteeism had increased dramatically over that of ten years before. These circumstances led to dramatic changes in manufacturing concepts, beginning at Volvo's Kalmar plant, where employees worked as teams. Changes reduced absenteeism and increased productivity by 20 percent, yet there was no apparent impact on product quality.

Although Swedish labor practices had reaped productivity dividends in the late 1960s, by 1973 labor's call for industrial democracy had alienated employers to the point where only 20 percent of new employees hired were Swedish. Today Sweden has the highest absenteeism rate in the world.

Canada

Canadian manufacturers also embraced Taylor's principles of scientific management. Because planning was separate from execution, and Canada's educated work force was underutilized, productivity increased, but product quality diminished and labor relations are adversarial. The Canadian government has instituted steps to improve the image and quality of their products. For example, the Canadian Labour Market and Productivity Centre (which is autonomous, although it was established through government efforts) disseminates information about the labor market, national productivity, and unemployment rates, and advises labor and management. Ontario's Quality of Worklife Centre provides support to some 26 joint management-union projects. However, two conditions affect product quality. First, labor unions are often threatened by quality of work life programs

because they increase communication between management and labor; and second, North American workers typically have an individualistic orientation that is not amenable to cooperative management techniques.

Summary of Quality Positions

A review of the literature suggests that products manufactured in Japan and West Germany are of the highest quality; products manufactured in the United States and Sweden represent a middle ground; and products manufactured in England, France, and Canada are expected to be of lowest quality among the seven nations examined in this study.

METHODOLOGY

The tests of the three hypotheses were carried out using information from the IPQD database. If a brand was manufactured by a firm located outside the United States and was shipped (partially or wholly assembled) to the U.S. for sale, it was considered a foreign brand. Similarly, if a brand was manufactured or assembled in the United States by a partially (51 percent) or wholly-owned subsidiary of a foreign firm, then it was classified as a foreign product. In each case a brand's specific country of origin was identified.

For purposes of statistical analyses, the ordinal rankings provided in the IPQD database were transformed within each product category to their percentile position score. Thus a brand ranked alone in first place in a product category would receive a percentile quality score of 100. A brand at the median would receive a percentile quality score of 50, etc.

RESULTS

Hypothesis 1

Hypothesis 1 concentrates on product quality competition during the period 1961 to 1985. Because of the intensity of the competition among the U.S., Japan, and West Germany, these three countries were chosen for this analysis.

Table 2 displays the mean quality scores for these countries arranged by time period. The column means in Table 2 show little variation. In the first time period, the mean quality score is 50.8, while periods 2, 3, 4, and 5 are also near 50. The direction of observed means runs counter to hypothesis 1, indicating that the quality of German products sold in the United States has remained fairly constant, and the quality of products from Japan may have declined somewhat. Because the U.S. means are constant through time, quality differences between American consumer products and those from West Germany and Japan have not increased and may even have decreased in the case of Japan. These trends hold in both durable and nondurable product categories.

The results for Japan may be a function of both export policy and export numbers. It is likely that the Japanese brands selected for export in the 1961-1965 period were the best Japan had to offer at that time. As the number of Japanese products entering the United States increased, the likelihood of more variation in quality also increased. Such variation would have a tendency to pull the mean quality score down, as suggested by the results of Table 2. In summary, hypothesis 1 is not confirmed by these data.

TABLE 2
MEAN QUALITY SCORES FOR THREE COUNTRIES OVER TIME AND PRODUCT TYPE[1]

	1961-1965		1966-1970		1971-1975		1976-1980		1981-1985		Row Means	
	Dur	Nondur*	Dur	Nondur	Dur	Nondur	Dur	Nondur	Dur	Nondur	Dur	Nondur
WEST GERMANY	60.8 (N=106)	49.9 (N=117)	58.1 (N=107)	40.8 (N=118)	61.4 (N=112)	50.6 (N=138)	61.5 (N=132)	50.1 (N=165)	60.5 (N=110)	47.9 (N=100)	60.5 (N=567)	48.1 (N=638)
	55.1 (N=223)		49.0 (N=225)		55.4 (N=250)		55.2 (N=297)		54.5 (N=210)		53.9 (N=1,205)	
JAPAN	61.8 (N=130)	47.0 (N=103)	48.6 (N=281)	--	52.6 (N=258)	44.0 (N=102)	53.7 (N=411)	41.0 (N=104)	54.2 (N=350)	44.0 (N=100)	53.4 (N=1430)	43.9 (N=409)
	55.2 (N=233)		48.6 (N=281)		50.2 (N=360)		51.1 (N=515)		51.9 (N=450)		51.3 (N=1,839)	
UNITED STATES	49.7 (N=1,019)	48.9 (N=402)	50.5 (N=1,572)	51.0 (N=545)	49.3 (N=1,863)	49.6 (N=772)	49.2 (N=1,756)	50.0 (N=913)	49.7 (N=700)	49.8 (N=650)	49.6 (N=6,910)	50.0 (N=3,282)
	49.5 (N=1,421)		50.6 (N=2,117)		49.4 (N=2,635)		49.5 (N=2,669)		49.7 (N=1,350)		49.7 (N=10,192)	
COLUMN MEANS	51.9 (N=1,255)	48.7 (N=622)	50.6 (N=1,960)	49.2 (N=663)	50.3 (N=2,233)	49.2 (N=1,012)	50.7 (N=2,299)	49.2 (N=1,182)	52.1 (N=1,160)	48.9 (N=850)	50.9 (N=8,907)	49.1 (N=4,329)
	50.8 (N=1,877)		50.3 (N=2,623)		49.9 (N=3,245)		50.2 (N=3,481)		50.7 (N=2,010)		50.3 (N=13,236)	

*Durables and Nondurables
Note: N represents the number in the sample.
1.Based on selected consumer durable and nondurable product categories.
Note: Calculated means may vary due to missing observations.

Hypothesis 2

A review of the literature suggested that products from Germany and Japan should have the highest quality, followed by those from the U.S. and Sweden, then those from England, France, and Canada. Table 3 shows mean quality scores for consumer products from seven nations. The data correspond on the margin to the figures presented in Table 2 for Germany (overall mean of 53.9) and Japan (overall mean of 51.3), but the time dimension has been excluded due to the failure to find differences through time in the test of hypothesis 1. Table 2 also includes data for Canada, England, France, and Sweden. The results roughly correspond to the hypothesized ordering of countries; for example, products from Japan and Germany are of higher average quality than those from the U.S., which in turn dominate over products from Canada. However, contrary to hypothesis 2, imported products from France and Sweden also surpass those from the U.S. in average quality.

The data indicate that the contribution to overall quality between durables and nondurables differs from one country to another, the greatest contrasts being found for Germany and England. Although the overall quality of German consumer products sold in the United States is 53.9, the mean score for German durables is much higher--60.5. Germany's overall mean is depressed by the average quality for German nondurables, which are represented in higher numbers than durables in these data. This contrast is in accord with the German reputation for high-quality capital goods.

Sweden has few products in either category, but they consistently score above the median in quality. In contrast to the results for Germany, Sweden's strength is in its imported nondurables that include dairy and grain products. Canada, Sweden, and the U.S. are the only three countries that have higher quality nondurables than durables. In the remaining countries, the quality of durables consistently exceeds that of nondurables, and in England, the differential is extremely large. English nondurables imported to the U.S. represent the lowest quality segment in these data.

TABLE 3
MEAN QUALITY SCORES:
DURABILITY x COUNTRY[1]

	Durability		
Country	Durables	Nondurables	Country
Canada	46.3	51.1	48.4
	(N=304)	(N=245)	(N=549)
England	55.4	35.7	47.4
	(N=167)	(N=114)	(N=281)
France	57.4	49.5	53.3
	(N=142)	(N=147)	(N=289)
West Germany	60.5	48.1	53.9
	(N=567)	(N=638)	(N=1,205)
Japan	53.4	43.9	51.3
	(N=1,430)	(N=409)	(N=1,839)
Sweden	58.8	69.1	62.9
	(N=168)	(N=111)	(N=279)
United States	49.6	50.0	49.7
	(N=6,910)	(N=3,282)	(N=10,192)

1. Based on selected consumer durable and nondurable product categories.

Hypothesis 3

The test of hypothesis 2 aggregated all products from Japan even though the Japanese reputation is based primarily on consumer electronics. Japanese electronics are, therefore, detailed in a test of hypothesis 3. Table 4 shows that in four of five cases Japanese quality is higher than U.S. quality at the mean, but the difference is not substantial.

TABLE 4
THE QUALITY OF JAPANESE VS. U.S. PRODUCTS
IN FIVE CATEGORIES

Product Category	Japan	United States
Calculators	54.1	46.2
Cameras 35mm	54.6	55.9
Radios	53.7	48.6
Stereos	59.6	48.4
TV's	50.4	49.6
All	53.8	49.3

In summary, the analysis for hypothesis 3 indicates that among the five categories studied, electronics products sold in the United States by Japanese manufacturers tend to exceed their U.S. counterparts in quality. The differences appear to be greatest in radios and stereos. In TVs and 35mm cameras, Japanese quality is almost identical U.S.

CONCLUSION

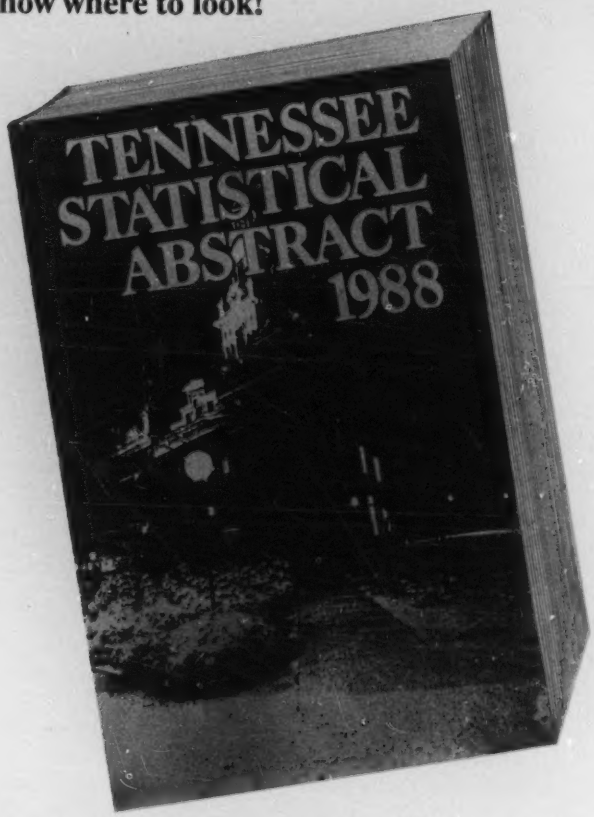
There is no doubt that increased competition from foreign firms selling high quality products has eroded the profits and market position of many U.S. consumer goods manufacturers. Results of the research generally support the hypothesis that domestic manufacturers have confronted intense competition from German and Japanese manufacturers and suggest that the quality gap between U.S. and foreign products did not change from 1961 to 1985. However, significant differences exist in the quality of products produced by different countries. Nondurable products from England were found to be of lower quality than nondurables in the other countries cited. For durables, Germany, Sweden, and France produce high quality goods. Japanese durables, though above average in quality, are not outstanding.

The results underscore a need for further research to determine the strategic importance of product quality in the domestic and the international marketplace. Ongoing research being conducted by the College of Business Administration at The University of Tennessee should eventually lead to more evidence to indicate ways the U.S. can improve its products, and eventually, its position in the world marketplace. □

(Further documentation for data in this article, too lengthy to include here, is available from the editor upon request.)

THE 1988 TENNESSEE STATISTICAL ABSTRACT IS YOUR SOURCE FOR INFORMATION

about everything you ever wanted to know about Tennessee and didn't know where to look!



More than 700 pages of economic and social data about Tennessee--including the most current historical information available for the state, MSAs, counties, cities, and towns.

Of special interest to planners and decisionmakers, the Tennessee Rankings section provides a means to compare Tennessee with other southeastern states and the nation in areas such as per capita income, population estimates, real estate and finances.

NOW AVAILABLE

"If we were judging a contest for the best state Statistical Abstract, our vote would go to yours." Glenn W. King, Chief, Statistical Compendia Staff, Bureau of the Census, Nov. 1985

Please send me _____ copy(ies) of the **1988 TENNESSEE STATISTICAL ABSTRACT** at the price of $27.95, plus $2.05 postage and handling per copy.

Please reserve a STANDING ORDER for ___ copy(ies). I understand that I will receive all future editions of the **TENNESSEE STATISTICAL ABSTRACT** until I elect to cancel my subscription.

Make checks payable to The University of Tennessee, and mail to Center for Business and Economic Research, 1000 Volunteer Blvd., Suite 100, Knoxville, TN 37996-4170. ☐ Bill Me. ☐ Payment Enclosed.

SEND TO:

NAME

ADDRESS

CITY STATE ZIP

SIGNATURE OF AUTHORIZED PURCHASER

The University of Tennessee
Spring 1988
Volume 23 Number 4

SURVEY OF BUSINESS

CONGRESSIONAL INFORMATION SERVICE

U8710-1
8/24/88

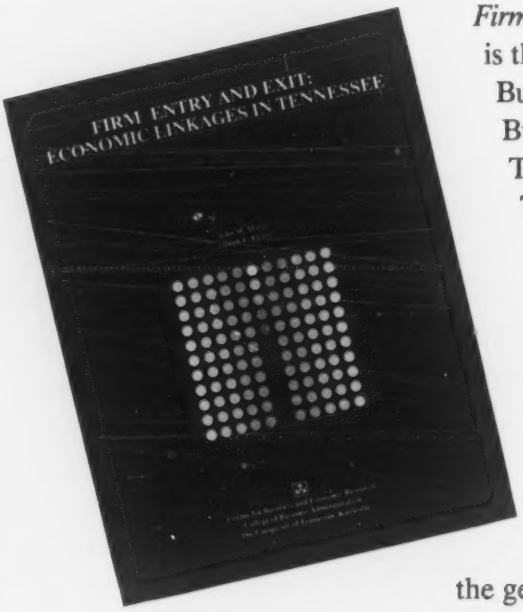
Summer 1988

Survey

PROFESSIONAL ETHICS

NEWEST IN THE SERIES

of monographs exploring the effect of entry and exit of firms in the Tennessee economy.



Firm Entry and Exit: Economic Linkages in Tennessee, is the second in a series of studies by the Center for Business and Economic Research, College of Business Administration, The University of Tennessee, Knoxville, in conjunction with the Tennessee Department of Employment Security. The report addresses the extent of causal linkages between the entry and exit of manufacturing and nonmanufacturing firms. Also available is the recently released initial monograph, *Entries and Exits in the Tennessee Economy, 1980-1985: Revised Edition,* presenting results of a study of entries and exits of firms in the state, including industries in which the firms are located, the geographic areas where exits and entries have occurred, and the sizes of firms involved.

Please send me _____ copy(ies) of **FIRM ENTRY AND EXIT: ECONOMIC LINKAGES IN TENNESSEE** or **ENTRIES AND EXITS OF FIRMS IN THE TENNESSEE ECONOMY: REVISED EDITION,** each at the price of $9.50, plus $1.05 postage and handling per copy.

Make checks payable to The University of Tennessee, and mail to Center for Business and Economic Research, 1000 Volunteer Blvd., Suite 100, Knoxville, TN 37996-4170. ☐ Bill Me. ☐ Payment Enclosed.

SEND COPY OF (Write title of book preferred) _____

TO:

_____

NAME

_____

ADDRESS

_____

CITY STATE

_____

SIGNATURE OF AUTHORIZED PURCHASER

C O N T E N T S

Consulting Editor's Comments	**2**	*Professor John R. Moore*
Ethics and Higher Education *by John R. Moore and C. Warren Neel*	**3**	*John Moore is Associate Dean of the College of Business Administration, and Professor of Economics, UTK. Warren Neel is Dean of the College of Business Administration, and Professor of Management, UTK.*
A Question of Ethics: The Role of CPAs in Modern Society *by Michael H. Sutton*	**9**	*Michael Sutton is a partner in the Accounting and Auditing Services Group in the executive office of Deloitte, Haskins, and Sells, where he is responsible for development of technical policies and procedures and long-range planning.*
Ethical Issues in Medicine *by Glenn C. Graber*	**15**	*Glenn Graber is a Professor of Philosophy and director of the University Studies Program at UTK. He also serves as Clinical Associate in Medical Ethics at the UT Medical Center at Knoxville. He has published widely in the area of medical ethics.*
Pennzoil V. Texaco: The Ethics of a Campaign Contribution *by Bruce D. Fisher*	**21**	*Bruce Fisher, a lawyer by training, is Professor of Business Law at The University of Tennessee, Knoxville. He is past president of the American Business Law Association.*

Survey
OF BUSINESS

C. Warren Neel, Dean
College of Business Administration

CBER APPOINTMENTS

David A. Hake, *Director, Research Professor and Editor,* **Survey of Business**
William F. Fox, *Associate Director and Research Professor*
John W. Mayo, *Research Associate Professor*
David M. Mandy, *Research Assistant Professor*
Matthew N. Murray, *Research Assistant Professor*
Lynell Aycock, *Clerk-typist*
Susan E. Bott, *Research Assistant*
Pamela L. Bridgman, *Research Asst.*
Maxwell J. Cornelius, *Manager, Computer Resources Group*
Deborah W. Crowder, *Office Supervisor, Computer Resources*
Victoria Cunningham, *Research Asst.*
Penelope M. Gilmore, *Research Assoc.*
Donna Kemper, *Senior Secretary*
Jean Knuckles, *Assistant to the Director*
Carol E. Lammers, *Research Associate*
Jennifer F. Langston, *Senior Secretary*
Carla Newton, *Secretary*
Patricia A. Price, *Sr. Research Associate*
Betty B. Vickers, *Research Associate*
Melissa Wood, *Research Assistant*

Graduate Research Assistants
Mark Burton
Tim Essenburg
Joseph Flynn
Maria Teresa Hocson
Janet Knoedler

Consultants
Kenneth E. Quindry, *Professor Emeritus*

Art Director
Richard J. LeFevre, *Associate Professor of Art*

PUBLICATIONS GROUP

Jeanne P. McDonald, *Managing Editor*
Joan S. Carr, *Research Assistant*
Lynn J. Landry, *Publications Coordinator*
Patricia A. Hunley, *Word Processing Group Supervisor*
Julia C. Elkins, *Word Processing Specialist*
Patricia D. Flynn, *Word Processing Specialist*

Consulting Editor's Comments

Ethical issues abound today as they have since the dawn of civilization. Increasingly it seems that many of these issues arise in the context of the work environment–in other words–a professional context. It seems appropriate, then , that we address ourselves in this issue of the **Survey**, to the topic of professional ethics from the standpoint of several of the major professions.

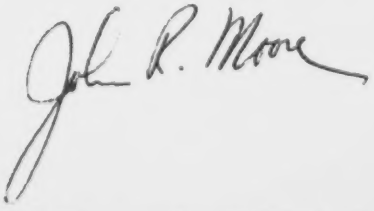
In the introductory essay, Dean Warren Neel and I examine the communication of ethical concepts from the standpoint of higher education for business. In this piece, we address the questions of ethics in the curriculum as well as the ethical context in which faculty and administration deal with undergraduate students.

The second piece is based on a speech by Michael Sutton which was delivered on Accounting Day in the fall of 1987. Indeed, that presentation planted the seed for this issue of the **Survey**. In his article, Mr. Sutton, who is a partner in the firm of Deloitte, Haskins, and Sells and who is thus familiar with the real world of ethical practice, discusses business ethics in general terms and then with specific application to the field of accounting.

Mushrooming ethical issues in the medical field are the focus of attention by Professor Glenn Graber. As a professor of philosophy, Glenn has focused professionally on medical ethics for years and has worked closely with professionals in the medical field. In his contribution, Dr. Graber summarizes the many areas in which difficult moral choices are presented.

In the final piece, Professor Bruce Fisher looks at an important case involving business ethics, which also sheds interesting light on ethics and jurisprudence. As a lawyer and professor of business law, Bruce finds the fascinating Texaco/Pennzoil case to present issues involving the political process as well as those related to the appropriate rules of ethical behavior for the bench and bar.

None of these articles claims to have categorical answers, but if they stimulate thought and discussion they will have served their purpose.



SURVEY OF BUSINESS, The University of Tennessee, Knoxville (ISSN 0099-0973), is published quarterly by the College of Business Administration, Center for Business and Economic Research The University of Tennessee, Knoxville to inform the Tennessee business professional about current economic and socio-economic trends and techniques developing in the state. Authorization No. EOI-1490-001-89. Back issues and article reprints may be ordered at $1.25 per copy. Address correspondence to Editor, Center for Business and Economic Research, Suite 100, Glocker Hall, The University of Tennessee, Knoxville, Knoxville, Tennessee, 37996-4170. Second class postage paid at Knoxville and Nashville, Tennessee. Requests for inclusion on mailing list and address corrections should be sent to the same address. The publisher of the **Survey** *assumes no responsibility for statements made by writers. Articles reflect the opinions of the authors. Postmaster: Send Change of Address form 3579 to: Center for Business and Economic Research, The University of Tennessee, Knoxville, Knoxville, Tennessee, 37996-4170.*

ETHICS AND HIGHER EDUCATION FOR BUSINESS

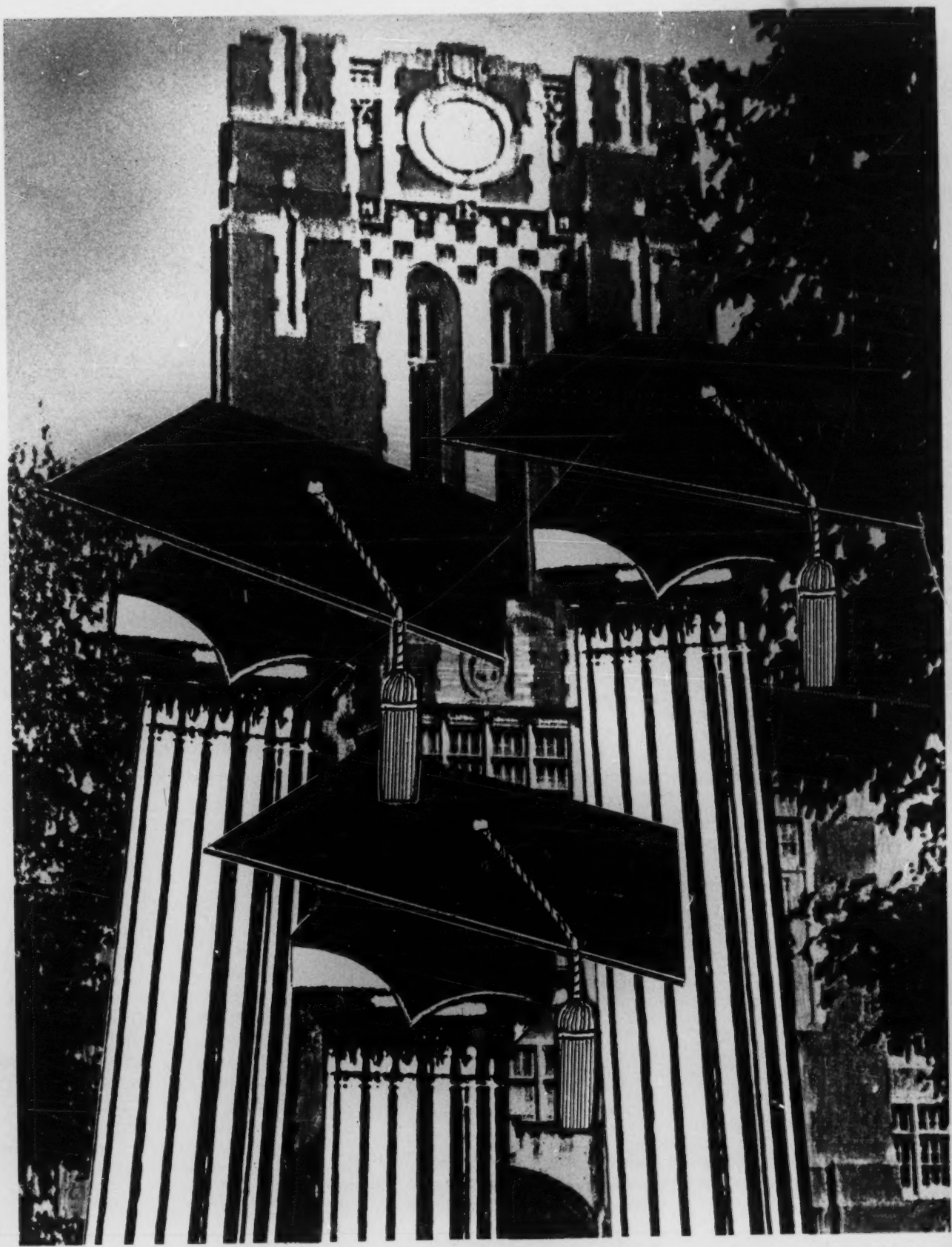
by John R. Moore and C. Warren Neel

While it may sometimes seem that lapses in ethical standards are most pervasive in the business sector, a moment's recollection of Watergate, the Iran-Contra affair and the recent televangelist scandals make it clear that if there is a problem, it is widespread, and it encompasses all social and professional elements of society.

As we are bombarded with TV news reports and newspaper and magazine articles detailing apparent wrongdoing in one or another segment of society, we have to ask ourselves whether ethical standards have deteriorated in recent years. If so, what is the cause? Are there steps which should be taken to deal with the situation?

While it may sometimes seem that lapses in ethical standards are most pervasive in the business sector, a moment's recollection of Watergate, the PTL, the Iran-Contra affair, and the Jimmy Swaggart scandal make it clear that if there is a problem, it is widespread, and it encompasses all social and professional elements of society.

It may be appropriate to begin with the question: Have ethical standards deteriorated in recent years? This is an interesting question, but one which is difficult to answer. Academics certainly could build careers in today's world of quantification strategy in development and application of research methodology to seek alternative measures or proxies for ethical or nonethical behavior. Unfortunately, it would take years, if not decades, to amass the wealth of data which might be persuasive--and even then, there would be pleas for "one more study" to correct the data or methodological flaws of the most recent and comprehensive report. We would argue that while this may be a tantalizing question, it is not necessary to be able to answer it before moving on. The Ten Commandments would hardly have been necessary if major



The material progress of the last several decades has been based more on the Smithian notion of "specialization and division of labor" which has forced each of us to think in more and more narrow terms and to identify with a special mission or interest, perhaps at the expenses of thinking and acting in the general good.

ethical and moral questions had not existed several millenia ago; if any such issues are still extant, a search for further solutions is in order.

The second question raised is this: What are the causes of the phenomenon that some have described as an "ethical crisis?" Of a number of theories spawned, one is that the causes are rooted in the breakdown of some of our basic institutions, such as the family and the community. Unfortunately, pursuit of this concept may be circular, for soon one must ask if the demise of formerly cherished units of societal organization must not have been preceded by or at least accompanied by a change in values. Where, indeed, did the "yuppies" come from, with their emphasis on monetary reward, instantaneous personal gratification, and ostentatious consumption? Certainly at least a portion of the phenomenon is not brand new, for Veblen commented on it nearly a century ago, but then conspicuous consumption was limited to a chosen few: it did not permeate the culture. Is the problem that our institutions are incapable of dealing with the rapid economic progress of the twentieth century? A failure to narrow the gap between the richest and the poorest in our society as the average standard of living has improved may lend support to this explanation. It may also be that the material progress of the last several decades has been based more on the Smithian notion of "specialization and division of labor" which has forced each of us to think in more and more narrow terms and to identify with a special mission or interest, perhaps at the expenses of thinking and acting for the general good. In today's society it is not intuitively obvious that the "invisible hand" is at work or, more specifically, that "what is good for General Motors is good for the country."

Another theory designed to explain the present state of affairs suggests that a search for cause may begin and end with an examination of the role of the media. We live today in an information society. We are bombarded at all times and in all places by a diversity of messages--many of which we have not sought to receive. Abraham Lincoln searched for the message he received as he read by the light of the fire or candle in a rude cabin. We and our children are inundated with the often unwanted message on highway billboards, in TV newscasts, and even in the information boards and magazines in the doctor's office. Three or four decades ago, Lawrence's *Lady Chatterly's Lover* was to be found only in the locked cage of the college library and was available to the undergraduate only after detailed explanation of the serious scholarly interest of the potential reader. Now much more "scandalous" goings on are depicted on the TV screen in the afternoon "soap operas" (a term dating, apparently, from the 1930s and certainly to be regarded as a paradox in today's application) or even more explicitly in the daytime talk shows. With the ubiquitous presentation today of natural and apparently acceptable topics which were regarded as immoral only a generation ago, it is little wonder that other standards of behavior have also come into question.

Regardless of whether or not the problem of ethical behavior has become more significant or what the possible explanations are for such a phenomenon, there appears to be rather widespread concern about ethical issues. A recent report on a large-scale survey of business executives, members of Congress, and business school deans said the following: "Ninety-four percent of our respondents say that the business community is troubled by ethical problems today, with only one-third believing that the issue has been overblown" [1]. How can and should higher education, and more particularly, higher education for business respond?

In our view, a college of business administration has two avenues to follow:

1. Via the curriculum, and

2. Via its own standards and practices in dealing with its students (i.e., by example).

The Curriculum

The curricula of most undergraduate programs in business administration are quite similar, and this similarity has the blessing of the accrediting organization, the American Association of Collegiate Schools of Business. The basic curricular structure can best be described as "adjacent squares," where the left-hand square represents the nonbusiness (liberal arts) portion of undergraduate study, and the right-hand square represents the professional or "business" portion of the degree program. It is true that business students do take accounting principles, economics, and perhaps some quantitative courses in the lower division; but all the work in the functional fields and in the major is mandated to take place at the junior/senior level, and there is little time left in the upper division for courses in arts and sciences or other areas. In effect this has meant that if business students were to be exposed to moral, ethical, and value questions in other than a random, casual fashion, this would have to occur in the liberal arts classrooms in the freshman and sophomore years.

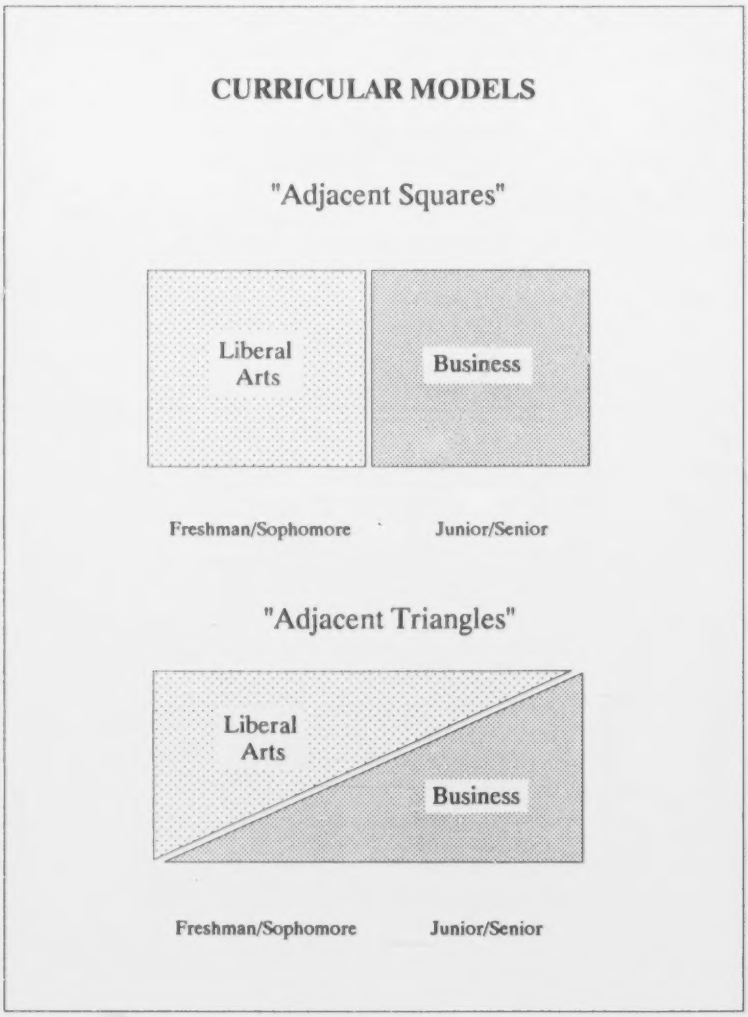
In our view, a better curricular model is based on adjacent triangles rather than adjacent squares. At the beginning of the four-year undergraduate program, the nonprofessional portion of the curriculum would dominate, with this portion diminishing toward zero at the end of the four years, while the professional portion of studies would begin at a minimal level and become the dominant element toward the end as illustrated in the chart below. Such a restructuring would do much to overcome the notion held by many of our students (rightfully so, based on the present structure of the curriculum) that their work in English, social sciences, the physical sciences and the humanities is merely a hurdle to be surmounted before getting into the "meat" or the professional, specialized curriculum.

If anything, the need to do a better job with ethical and value issues has become stronger in the 1980s with the development of two trends in the business world: 1) downsizing and 2) globalization. Downsizing means that more and more executives in decades to come are likely to be in a position to influence others in terms of structuring the moral climate in which business will operate. As a result of globalization, American firms will compete at home and abroad with foreign firms and nationals steeped in completely different cultures and imbued with sometimes radically different ethical standards. In our view, the American businessman who espouses a "situational ethics" view will not be successful in dealing with either the pressures of downsizing or globalization. At the purely practical level, situational ethics requires that each situation be considered unique. Such a practice would drain precious time from other duties. More important, though, is the need for the individual to have the self-confidence built on the knowledge that his or her basic values have been thought out and are based firmly on certain tested principles. To provide less of a foundation for our students is to fail them in a most vital part of their education.

Restructuring the curriculum along the lines of the adjacent triangles will help. Such a restructuring will aid the student in seeing his undergraduate experience as a whole, a continuum. It will also allow the student to experience greater depth in the nonprofessional portion of his or her studies. Perhaps some or all of our students will study foreign languages and in this way, and through "Western civ" and other such comprehensive courses, gain an appreciation for the richness of cultural diversity. Dealing in a globalized economy with those of different backgrounds should be easier for one who clearly understands his own values and where they come from. If, then, alternative standards are suggested, at least our students will clearly know what is to be given up and will be able to evaluate any compromise.

But what of the teaching program itself? Should the teaching of ethics be packaged into one course, or should it permeate the curriculum? There are advantages and disadvantages to each of these approaches, but the best solution is probably to attempt to do both.

The advantages of the course approach include the possibility of having better trained teachers and the opportunity to go with some depth and rigor into the foundations of ethical behavior. The negatives may be that such a course may not seem to be an integral part of the entire fabric of business life. It may also be that it would be difficult to find enough trained teachers to staff all the classes which might be necessary. The latter point also raises the question of who should teach such a course: a professor of philosophy or a member of the business school faculty? There are pros and cons. The stereotypical philosophy professor will have had little "real world" business experience and may have difficulty in relating scholarly principles to reality. On the other hand, the business professor will typically have had no formal training in ethics and may have many "ethical war stories" to tell, but no formal framework for setting forth an



Higher education may also have unwittingly contributed to the breakdown during the '60s and '70s in the way it adjusted to the demands of its student bodies. In responding to the clamor for relevance and freedom for the individual, the institution may have sacrificed the freedom and best interest of the larger group.

approach to ethical decision making. In the short run, the answer may be in team teaching. In the long run, the doctoral programs which produce business faculty must consider formal training in ethics to be at least as important as the mastery of advanced computational techniques.

How about lacing the curriculum with ethical content? Here again there are advantages and disadvantages. A clearer advantage is that such an approach makes ethical issues part of the warp and woof of business life. A second advantage may be motivational: the topic of ethics may appear to be less exciting if divorced from the disciplinary context. As with the course approach, a major problem may be the lack of trained instructors. A more fatal flaw may be that what is seen as everyone's job turns out to be no one's job. In recent years, the business school faculty has recognized that it is not enough to require courses in English at the college level; rather, the faculty throughout the university needs to make the proper use of the language a part of its responsibility. To do the same thing with ethics at this time is certainly possible, but more difficult since the same level of motivation and preparation may not be present. In the near term, such a development will require that ethics units be programmed into core and major courses syllabi.

Setting Examples

It is often said that the elemental forces governing the development of character, values, and ethical and moral standards are found in the basic institutions such as home, family, and religion. As we have previously observed, some have cited the breakdown of one or more of these basic institutions as leading to widespread current concern about ethical behavior. Higher education may also have unwittingly contributed to the breakdown during the sixties and seventies in the way it adjusted to the demands of its student bodies. In responding to the clamor for relevance and freedom for the individual, the institution may have sacrificed the freedom and best interest of the larger group. For example, students demanded the right to be free of faculty advice in the choice of an academic program. The faculty acceded to that demand, and those mature students who needed no guidance were free to do what they would, when they would. Certainly, math should be taken before statistics or functional area courses built on the presumption that certain mathematical tools had been mastered, but if the student delayed the math course to the end of his program, so what?

Of course, the result was that to the extent that some members of advanced classes were not well prepared, their educations suffered. Yet, so did the educations of those who *were* prepared, but who found the overall learning environment diminished by the intellectual gap in their student colleagues. In the mid-eighties, of course, the pendulum has swung back, and now everyone is to be advised every quarter. Now some would see no ethical content in such decisions, but it is our feeling that in reversing its position, the university is saying that the individual must look beyond what he perceives as his own direct and immediate interest where the ultimate good of the organization and its members is at stake.

Take another example. In 1980, The University of Tennessee College of Business had 5300 undergraduate students with the capacity to handle fewer than 4000 students, even when using TV courses in accounting, economics, and management; using large lecture sections of 200 or more, and filling the smaller classrooms to the physical capacity of the chairs which could be pushed, dragged, or towed into the classrooms. The students clamored for as many as 8000 seats per quarter more than could be provided. Many students needed to stay in school two or three additional quarters in order to register for the business courses required to graduate. Despite these pressures, nearly 20 percent of the seats occupied by the students at the beginning of the quarter were vacant by the end of the quarter. These dropout students who may have prevented another student from enrolling in a class, then competed again for the limited seats available at the beginning of the next quarter, thus exacerbating the problem.

In 1980, individual students had great freedom. They could enroll in a class, stay there for half the term, and then decide whether they were doing well enough to continue. Of course, for many, the option led to a self-fulfilling prophecy: "If I can drop at any time, I'll see if I can get by with little or no effort." The answer of course was generally no, and the student then dropped himself and came around for another try. With the advent of its "administered enrollment plan" in 1980, which provided academic standards for progression to the junior/senior year, the College made it clear that it would look at the record of withdrawals as one evidence of serious, responsible behavior on the part of its students. Simultaneously, the College urged the remainder of the university community to cut the free withdrawal period from five weeks to 10 days in keeping with the period in which classes could be added, so that the places of those who did drop could be

made available to those on a list who were waiting to be added. As a result of these two moves designed to instill a greater sense of student responsibility, the dropout rate fell quickly from 18 percent of total enrollments to a current level of about 3 percent.

Ethical Behavior

There are other areas in which the College can, by example, help undergird a sense of responsible, ethical behavior. One of these is in the area of cheating on tests or other academic exercises. The position of the College has been that one of its major objectives is to prepare its students for life, and that cheating is not acceptable behavior in business or indeed in any aspect of living. This is an easier lesson to learn in the academy than in the outside world, and faculty have attempted to deal fairly but sternly with classroom cheating. Perhaps as a result of the stance of the College in this regard, the leadership of the College undergraduate student body has been in the vanguard of a campus-wide student movement designed to foster an honor code.

Another area where responsible decisions are essential, but difficult, is in determining how the available spaces will be rationed among those seeking to major in business. As a former University of Tennessee vice chancellor often pointed out, the criterion of fairness often seems to collide with the equal treatment rule. This has certainly been true as we have made our administered enrollment plan operational, especially as it has been subject to modification over the years and as we have attempted to interpret the plan and its rationale to our various constituencies. This may be the area in which the ethical behavior of the College administration is most seriously tested, but one in which consistency is most surely needed. Certainly we need to be sensitive and fair to each individual, but we must always be mindful of the equal treatment rule as well.

In this essay we have dealt in very general terms with some of the issues of professional ethics, especially as they relate to higher education for business. We have not attempted to suggest specific moral or ethical principles which might guide behavior, regardless of the situation. If we were to suggest such a principle, however, it would probably be Immanuel Kant's "categorical imperative: *...I am never to act otherwise than so that I could at the same time will that my maxim should become a universal law.* [2] While such a guidepost may not solve all ethical dilemmas, it is a good starting point, and better than most.

REFERENCES

[1] *Ethics in American Business: A Special Report.* (New York: Touche Ross, 1988), p. 6.

[2]Immanuel Kant, *The Fundamental Principles of the Metaphysics of Ethics*. (New York, Appleton-Century-Crofts, Inc., 1938), p. 17.□

A QUESTION OF ETHICS: THE ROLE OF CPAs IN MODERN SOCIETY

by Michael H. Sutton

Recent widespread publicity reflects a growing concern over a seeming crisis of integrity in our business community. Have we had a breakdown in business ethics in this country? Has business betrayed its public trust?

The issue of ethics has been the subject of recent widespread publicity–publicity that reflects a growing concern over a seeming crisis of integrity in our business community. We have read about illegal insider trading on Wall Street; scandals surrounding the collapse of financial institutions; congressional investigations of fraudulent financial reporting; check-kiting schemes and other questionable practices in some of our most important business institutions; bribery, bid-rigging, indictments, and convictions. Even the televangelists have managed to cast doubt over the fiscal integrity of organized religion.

What does this all mean? Have we had a breakdown in business ethics in this country? Has business betrayed its public trust?

Recently *The Wall Street Journal*, publishing the results of an opinion poll, said that when asked to what extent people are not ethical in their business dealings, 66 percent of the senior executives surveyed responded "occasionally," and 18 percent said, "often" or "more often than not."

An earlier poll by *The New York Times* reported that most Americans don't believe that business meets the ethical standards that the public expects. Only one-third of those questioned said that they believe that business does an "excellent" or even a "pretty good" job of behaving ethically.

To gain insight into this perplexing issue, we must first establish some common understanding about what we mean by "business ethics." Ethics

"Ethics" is "ethics" – whether in our business lives or in our personal lives. And it doesn't mean doing only what is legal or doing only what is allowed by the rules and regulations; rather, it means doing what is right.

is defined as "the discipline dealing with what is good or bad and with moral duty and obligation." That definition we understand. But what do we mean by "business ethics"? I recently heard one man's personal definition of ethics, as it applies to business practices. "Ethics," he said, "is a set of rules laid down by professionals to show the way they would like to act – if they could afford it." While we can chuckle at the humor of that statement, we also feel a little uncomfortable in hearing it – because it may actually contain truth.

Doing What is Right

In addressing the definition of business ethics, Peter Drucker, the renowned management expert and author, said, "all authorities of the Western tradition – from the Old Testament prophets all the way to [our modern philosophers] are . . . in complete agreement on one point: there is only one ethics, one set of rules of morality, one code – that of *individual* behavior in which the same rules apply to everyone alike." Stated simply, then, "ethics" is "ethics" – whether in our business lives or in our personal lives. And it doesn't mean doing only what is legal or doing only what is allowed by the rules and regulations; rather, it means doing what is right.

Just how big is this problem, anyway? We know that we can never rid society of the egregious conduct of a few individuals who will always make the headlines. But do the sensational stories that have been reported recently really indicate that there is more to be concerned about than just the bad behavior of a few? And if the vast majority of businessmen are ethical, aren't we overreacting to the notorious behavior of a famous few?

Perception and Reality

If we are totally honest, we should admit that it really does not matter whether the bad news is due to the conduct of a few or many – because the public *perception* of widespread misconduct has become the reality for all of us. If the public believes that we are not behaving responsibly, that *perception* is a *real* problem. And that problem must be dealt with – by our business leaders, by the leaders of our public accounting profession, and by our educational institutions.

But how *can* the problem be dealt with? What must the business community do? As a starting point, we must reexamine our ethical cultures and codes of conduct; we must determine that the guidelines laid down for our people are meaningful and responsive to the public interest; and we must be sure that the message is filtered down through all levels of our organizations.

Who is Responsible?

Some would argue that ethical behavior is the responsibility of each individual within an organization and that the organization cannot be held responsible for the errant behavior of a few of its employees. A very recent study conducted at the University of Pittsburgh, however, has blamed ethical lapses more on corporate goals than on the failings of individuals. Professor William Frederick, who conducted the University of Pittsburgh study, concluded that "the culprit is not personal values, but corporate culture." He found, for example, that corporations with codes of ethics are actually cited by federal agencies for infractions more often than those that lack such standards. "The reason," Professor Frederick says, "is that the codes themselves typically emphasize improving the companies' balance sheets" - rather than meeting their social responsibilities.

A recent Washington State University study of the ethical codes at 202 Fortune 500 companies tends to support Professor Frederick's findings. That study found that 75 percent of the ethical codes reviewed failed to address the firm's role in civic and community affairs. In addition, three-quarters of the code failed even to mention such issues

In a survey of 220 business managers, self-respect ranked first among their values, followed by family security, freedom, and accomplishment. Pleasure ranked dead last, along with beauty and social recognition. Among the attributes, honesty ranked first, followed by responsibility, capability, ambition and independence.

as consumer relations, environmental safety and product safety. On the other hand, more than three-quarters of the codes dealt with conflicts of interest between employees and the corporation – matters that can affect the corporate bottom line.

To gain further insight into the effect of corporate culture on ethical behavior, Professor Frederick also asked 220 Pittsburgh-area business managers about their personal codes of ethics. In that survey, he found that the business managers, as individuals, expressed a great deal of concern for ethical values.

The participants were asked to review independently a set of 18 values and 18 attributes, and then pick the ones that they thought were most important in their lives. On average, self-respect ranked first among the values, followed by family security, freedom, and accomplishment. Pleasure ranked dead last, along with beauty and social recognition. Among the attributes, honesty ranked first, followed by responsibility, capability, ambition and independence. Obedience ranked last. When comparing the results of the study of corporate codes with the results of the survey of individual codes, Professor Frederick observed, "You can't find any connection between what people are saying and what's actually happening in the workplace. People's personal values are getting blocked by the needs of the company."

Some would respond: "Look, it's the responsibility of the corporation to make money for its stockholders, and it's unrealistic to expect our business organizations to put ethical values above the corporate interest." A Washington lawyer who has written and lectured extensively on white-collar crime, recently said, "If you expect the average businessman to be St. Augustine, you're kidding yourself." However, I would reply to that lawyer that in my nearly 25 years of experience as an auditor of a broad cross-section of American businesses – from the largest to the smallest – I have found that the business leaders and organizations that are the most respected and that have been the most successful financially over the long run have earned that respect and success in large measure because of their character and ethics. For example, recently I heard John Smale, Chairman and Chief Executive Officer of The Procter & Gamble Company, address our Annual Partners' meeting. Mr. Smale was reflecting on the 150th anniversary of Proctor and Gamble and the success of that organization – probably the most successful consumer products company ever – over an extraordinarily long period of time. And this was his assessment: "Honesty, integrity, fairness and a respect and concern for others have been characteristics of P&G ever since its founding . . . . We always try to do what's right."

Mr. Smale went on to say that not only is ethical business good business, but the ethical way is the only way to do business for the long term. "There is no doubt that ethical behavior ultimately pays off at the bottom line," he said, "and it is absolutely essential in building a successful and lasting business. Procter & Gamble people don't have to make a choice about whether they conduct their work lives by the same principles with which they conduct their private lives."

In yet another example, you all will recall the fall of 1982, when the nation was literally terrorized by the Tylenol poisoning. In what has been described as a marketing miracle, Johnson & Johnson was able not only to survive that crisis and preserve the Tylenol brand, but – remarkably – was able to substantially recover its market share. Recently, James Burke, Chairman and Chief Executive Officer of Johnson & Johnson, commented on that experience and made these observations. "I was, needless to say, proud of the heroic job done by dozens of our employees. It was an institution – Johnson & Johnson. Does anyone

seriously believe, that the XYZ company could have accomplished what the magic of the Johnson & Johnson name did? We went to the public and asked them to trust us. And because of four generations – almost a hundred years – of ethical behavior, they did. And they gave us back our business."

"Certainly ethical behavior alone won't insure success," Burke continued. "But I do believe that in our society, where the public has the power it does, unethical behavior will make failure in the long run a certainty."

The underlying message for both our organizations and our people is a strong message that ethical business is good business. Having a strong corporate culture of character and integrity *will* benefit both the profit-making potential of the organization *and* the public interest.

Ethics in Accounting

To reinforce the message, what must the public accounting profession do? The role of the certified public accountant is constantly evolving, and CPAs continue to struggle with issues about that role and the scope of services that a CPA may appropriately provide. But some characteristics of the profession are relatively constant.

A recent magazine article described the role of the public accountant by saying, "Today, it is no overstatement to say that there are preeminently three professions upon whose ethics, as well as upon whose skill, modern society depends – law, medicine and certified public accounting – yet certified public accounts walk in the shadow of virtual anonymity. Upon the expert opinion of these abstract beings, who pit their judgement against the unbelievably subtle economic forces of this generation, the financial structure of our greatest industries is founded." This quotation is from *Fortune* magazine. To be precise, it is from the June 1932 issue of *Fortune*, from an article that described public accounting as the "youngest, least-known, and most responsible of professions . . . watchdogs guarding the stockholder against misstatement . . . whose say-so determines the basis of many great mergers; who vouch for earnings per share of the stock you buy; whose opinion . . . determines all important borrowing and leading decisions."

It is interesting that in this article, written 55 years ago – at a time when there was little awareness of the profession -- the author focused on the character of the CPA and the ethical qualities he must exhibit in order to properly practice his profession. Today, CPAs no longer operate in anonymity. Their challenges have expanded, their world has become more complex, and their visibility has increased. And they are still striving to meet those same long-standing public expectations described in the *Fortune* article.

Meeting these expectations requires a continuing, absolute commitment to objectivity and integrity. These are the characteristics that have enabled the profession to rise above a clerical status and to develop and grow. As a profession, accounting can never take its public trust lightly and must constantly strive to strengthen its performance in the eyes of the public, particularly since the profession has been under investigation during the last two years by the subcommittee on Oversight and Investigation of the House Committee on Energy and Commerce. This subcommittee, chaired by representative John Dingell, has been looking into auditor performance in light of a series of business failures that allegedly involved fraudulent financial reporting. And last year, a member of that subcommittee introduced legislation that sought to regulate the public accounting profession, with the objective of requiring independent auditors to discover and disclose to government regulators all instances of financial fraud.

The proposal was so sweeping and would have so drastically altered the role of the independent auditor and its relationship with companies it audits that serious questions were raised about the practicality and the efficacy of this legislative approach. The profession and business responded to the concerns expressed by the Dingell Subcommittee and, through a joint effort of the American Institute of Certified Public Accountants, the Financial Executives Institute, the National Association of Accountants, The American Accounting Association and the Institute of Internal Auditors, formed the National Commission on Fraudulent Financial Reporting.

This six-member commission, chaired by James Treadway, a prominent lawyer and a former member of the Securities and Exchange Commission, was independent of the sponsoring organizations. Their charge was to study the issues broadly and to make recommendations to all of us who have responsibility for preventing, detecting or deterring fraudulent financial reporting.

Recommendations of the Committee

Recently, after two years, millions of dollars in research and study, and much deliberation, the Treadway Commission issued its report. The first recommendation deals with what the commission called the the "tone at the top," concluding that the most important factor contributing to the integrity of financial reporting is the "tone set by top management" – the corporate environment or culture within which financial reporting occurs. The commission also had a number of recommendations for the public accounting profession, dealing with such matters as audit quality, auditor communications with the public and the process of setting auditing standards.

The AICPA had anticipated many of the Treadway Commission Recommendations and has already responded with a series of proposed changes in professional standards and other initiatives that promise to substantially address the concerns of Congress and the Public.

This experience has emphasized the very fragile nature of public trust and has served to remind us that we must remain constantly vigilant if we are to maintain that trust. Although fraudulent financial reporting is not pervasive, each case is very damaging, not only in monetary losses to the public, but also to the credibility of our financial reporting system.

The Public Perception

Lou Harris and Associates recently conducted a public opinion poll for the

In the late 1970s, a number of business schools began to introduce ethics courses into their curricula, and the trend has continued. There is a growing feeling that our business schools should do more to remind our youth constantly that the purpose of business is not the pursuit of wealth for self-interest, but rather the creation of wealth in the public interest.

AICPA to enable us to better understand today's perception of CPAs. The survey results indicated that the accounting profession continues to be one of the most highly regarded institutions in the country. An impressive majority of the general public (56 percent) and the knowledgeable public (75 percent) sees accountants as being honest, competent and reliable, and as having high ethical and moral standards. Among key leadership groups that are knowledgeable about accounting, there is a high degree of confidence (90 percent) that CPAs measure up in their ethical and moral practices. The primary challenge to practicing CPAs is to maintain that public trust. As Lou Harris put it, "CPAs are riding so high in esteem that their risks are that they will fall short of the public's expectations." To meet that challenge of maintaining the public trust, accountants must constantly demonstrate a commitment to higher standards, higher qualifications and greater excellence in performance; and as individual practitioners, they must be sure that each ethical decision made – is the right decision from the perspective of the public interest.

Finally, in the interest of maintaining ethical principles, what must our colleges and universities do? In the late 1970s, a number of business schools began to introduce ethics courses into their curricula, and the trend has continued. There is a growing feeling that our business schools should do more to remind our youth constantly that the purpose of business is not the pursuit of wealth for self interest, but rather the creation of wealth in the public interest.

The feeling that our schools should do more is linked in part to the revelations about illegal insider trading. As such cases have unfolded, it has become evident that the culprits are not classical criminal types. Rather, they come from the ranks of the most successful young investment bankers on Wall Street. They have been high achievers – some have been leading students from some of the finest business schools in the country. Yet, for reasons that we find impossible to understand, they have thrown away promising careers for short-term personal gain.

John Shad, who until recently was Chairman of the Securities and Exchange Commission, was so moved by the insider trading disclosures that he recently made an endowment of $25 million to Harvard Business School for the study of ethics. Harvard is well known for its case study teaching methodology. At the time Mr. Shad made his gift, there was an expectation that the school would establish several classes in ethics and use the case method to develop examples of ethical dilemmas facing businessmen. Instead, evidently, Harvard is undertaking the Herculean task of reexamining many of the existing cases used in its core disciplines, such as marketing, finance, personnel and production, and plans to identify and place new emphasis on the ethical dimensions in each case – within the context of the discipline. The approach recognizes, and rightfully so, that there is an ethical dimension to most of the complex problems that arise throughout business.

In the final analysis, our educational institutions should recognize, through the curriculum development process and otherwise, that although business ethics and ethical failures are in the headlines today, the issues are not new. In fact those same issues will be with us as we educate and train our business and professional leaders for the 1990's and beyond.

If our business schools will recognize the need to foster the development of ethical values in our future business leaders – and reflect that need in their programs – their efforts will go a long way in preparing our students for the challenges they will face. □

ETHICAL ISSUES IN MEDICINE

by Glenn C. Graber

The fact that medical science has developed a panoply of technologies to serve patients' medical needs both increases the demand for services and produces dilemmas about the appropriate use of these technologies.

In many ways, medicine is a victim of its own successes. Since medical care is effective in saving life, relieving suffering, and preventing or alleviating disability, demand is therefore heavy and insistent, though resources are limited and expensive.

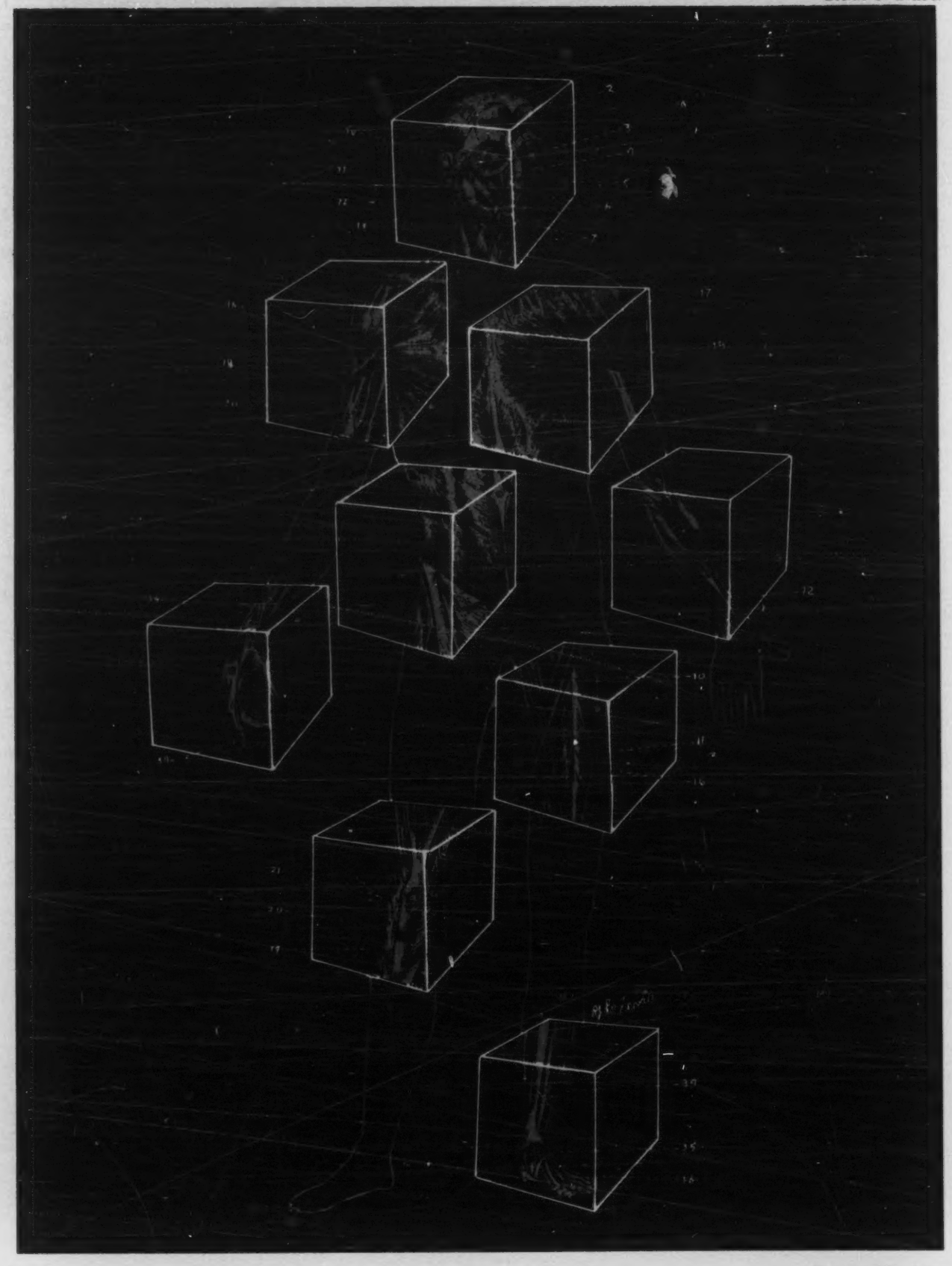
The fact that medical science has developed a panoply of technologies to serve patients' medical needs both increases the demand for services and produces dilemmas about the appropriate use of these technologies.

To examine ethical issues in contemporary health, we should organize the discussion under three categories: relationships, resources, and restraint.

Relationships

Physician-patient relationship. The central relationship in health care is that which exists between physician and patient. Conventionally, the image of an established, long-term relationship typified by the small-town family doctor of earlier years influences the thinking and attitudes of both parties, although this ideal is not often realized in today's health care institutions.

Still, patients generally accord their physicians enormous trust and confidence; otherwise, they would not be willing to reveal delicate information, submit to embarrassing and/or painful examinations and treatments, and follow onerous treatment regimens. One dramatic indication of the level of trust patients place in their physicians is demonstrated in a recent poll in which virtually all patients questioned admitted



The patients' rights movement (building on the intellectual momentum of the civil rights movement and various "liberation" movements of the 1960s and 1970s) has urged that all significant decisions be left to the person most directly affected. On this view, the physician's responsibility is merely to supply the technical information the patient requires to make an educated decision and then to employ his technical skill in implementing the course of treatment the patient has chosen.

they believed that a significant proportion of physicians were seriously deficient in essential knowledge and/or skills, yet all patients insisted that their own personal physicians were exceptions to this trend. This attitude seems to indicate that most people cannot face the possibility that they are entrusting their lives and health to inadequate professionals.

Two questions arise in connection with the physician-patient relationship: (1) What is the scope of the physician's responsibility? and (2) Who should have the final say in decisions about medical treatments?

The scope of the physician's responsibility. As other support systems diminish in our increasingly mobile and fragmented society, people turn to their physicians with problems they would formerly have taken to a minister or a member of their extended family. Many physicians are tempted to accept the challenge of dealing with these problems, largely from an unbounded desire to be of help to people in need. But is it appropriate for the physician to take on all such issues? Suppose, for example, that a woman patient comes to her physician with the concern that her husband is developing a drinking problem. Is it appropriate for the physician to make contact with the husband to try to persuade him to seek help? Favoring the decision to take action is the consideration that the woman may not know who else to turn to for assistance in dealing with this problem. Further, the respect accorded to the physician may make his intervention more effective in awakening the husband to his problem than all the nagging the wife could manage.

On the other hand, however, it is an intrusion for the physician to initiate a discussion of this situation with the husband. The typical initiation of a physician-patient interaction in our society (except in emergency situations) is a voluntary choice of the patient to seek help. Furthermore, the physician does not have much to offer the husband if he does contact him, since medical treatments are not very effective in dealing with alcoholism, and the most effective approach is a lay support group like Alcoholics Anonymous.

On this issue, as on other issues we shall examine here, there are no easy answers. Individual physicians and patients, and the society at large, must work out priorities among the values involved.

The final say. Who should have the final say in decisions about medical treatments? On the one hand, since patients prize decisiveness and certitude in their physicians and are often frightened and uneasy when it comes to making treatment decisions, many find it comforting to turn decisions wholly over to their physicians. And many physicians are only too willing to accept this role – some because they relish the resulting position of power and authority, others because they view this role as a part of the professional service they render to patients. However, our society's recent tradition of mistrust of authority (including that of professionals) makes patients reluctant to transfer momentous decisions. The patients' rights movement (building on the intellectual momentum of the civil rights movement and various "liberation" movements of the 1960s and 1970s) has urged that all significant decisions should be left to the person most directly affected. On this view, the physician's responsibility is merely to supply the technical information the patient requires to make an educated decision and then to employ his technical skill in implementing the course of treatment the patient has chosen.

The best approach might be one involving shared decision-making, in which the physician's role goes beyond providing technical information to include offering professional recommendations about what he judges to be the best thing to do, yet at the same time guiding the patient to take personal responsibility for the final decision.[1]

Not all patients are capable of taking responsibility for medical decisions. Decisions for infants, those in a coma, and those wholly incapacitated by mental illness must be made entirely by others; and many who would not be classified as mentally incompetent are to various degrees emotionally and intellectually impaired in decision-making. In such cases, others may properly take a strong role in decisions.

Family relationships. How much should family members be told about the diagnosis, treatment, and prognosis of a patient? Our image of a family is of a close-knit group whose members have the others' best interests at heart and will offer comfort and support to each other in times of trouble. But, like other ideal images, this definition does not always apply in the real world. Tensions within the family can lead to a less-than-helpful response by family members, and this possibility must be taken into account in deciding how much information to share with family members and what role to invite them to play in making decisions about a given patient.

In a family that is obviously close and mutually supportive, a discussion of the mother's diagnosis of cancer might be quite open and the decisions about her care a joint enterprise. However, for a patient who has been ostracized by his family because of his homosexuality, it might be inappropriate to inform anyone else of his diagnosis of AIDS without express permission from him.

Another question that arises here involves family for these decision purposes. The patient may be brought to the hospital by a live-in companion, only to have the legal spouse and/or

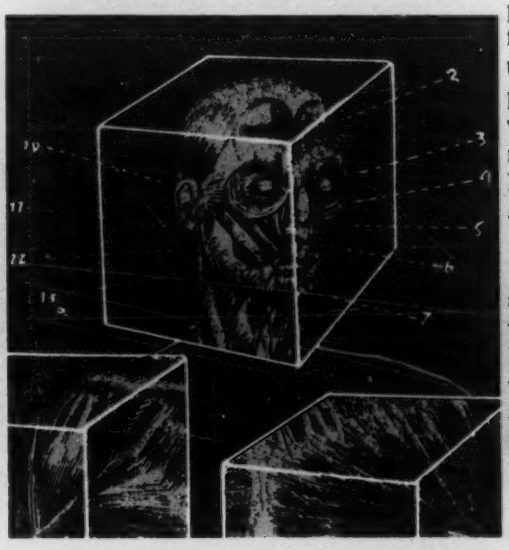
Are health services best left to the influences of market forces, or are they "too important" to be subjected to these vagaries, as some argue? Should these decisions be made bureaucratically or by means of some form of direct citizen input or by the employers and third-party payers who finance most people's health care? Or should decisions be made through some combination of choices?

adult children show up later and insist that the companion be ejected and barred from discussions about the patient. Or, an elderly patient whose adult children live far away and rarely visit may be accompanied by a close friend who has a view of what the patient would want done that differs dramatically from the demands of the children.

Physicians and other health care professionals face these sorts of dilemmas daily. They must determine who speaks for the patient when the patient cannot speak for himself and who ought to be included in the decision-making, even when the patient can also take part but is impaired. In these situations and others, the physician is often required to choose between upholding traditional societal values (i.e., the ideal image of family) and pragmatic judgments about what serves the best interests of the particular patient.

Are We Dividing and Conquering? In today's complex health-care institutions, the principle of division of labor is alive and well. A large number of medical specialists and sub-specialists may become involved in the treatment of a single given patient. Furthermore, there are dozens of nurses, technologists, and other allied health personnel who also assist in each patient's care. This complexity gives rise to issues of communication and the division of responsibility. Traditionally, all decisions about the care of a patient were seen as the responsibility of the physician who admitted the patient to the hospital. However, in some cases, the admitting physician *may not* be the physician who knows the patient best, and in other cases, he may not be the physician who best understands the problem the patient is ultimately found to have. Further, there is always the danger that, in having each specialist pay careful attention to his own respective interest in the patient and his problems, no one will take account of the *whole person* and his overall well-being.

The traditional view of the relationship of the physician to "allied" health professionals is that the physician was master of all medical knowledge and the role of other personnel was merely to carry out the specific orders issued by the physician. However, given the explosion of technical knowledge in health care, it is no longer possible for physicians to master it all. Thus, other health professionals must play a much more active role in medical decisions than was traditionally the case. Physical therapists, for example, spend many more hours studying the workings of bones, musculature, etc., and methods for overcoming pain and disability than the typical physician; hence they have more than technical skill to offer to the physician. They may have knowledge about modes of treatment which the physician in charge is not aware of and a level of detailed information about treatments that is greater than that of the attending physician.



The structure that has emerged to mesh the expertise and skill of these various professionals is the notion of "team care." But this notion is another ideal that is easier to envision in the abstract than to implement in practice. I have seen a genuine team approach at work in some hospital units, largely ones with a stable group of professionals and a limited panel of long-term patients such as intensive care nurseries and oncology units, but fragmentation of care is all too common.

Further, the involvement of large numbers of people in the care of a patient raises questions of confidentiality and patient trust. How can the patient develop the necessary level of trust in two or three dozen professionals, many of whom are encountered only briefly and in impersonal surroundings (e.g., gowned and masked, or standing behind a lead radiation shield)? Concerning confidentiality, how many of the personnel in a hospital need to know of a diagnosis of AIDS?

Resources

Most of the foregoing issues deal with individual moral choices (although social decisions--especially in the form of law--may affect them). However, there remains another set of issues that can be addressed only on a social level: how much of the society's resources should we devote to health care instead of other social goods like education, national defense, police protection, housing, etc.? A few years ago, when the percentage of the GNP devoted to health care passed the 10 percent mark, there was widespread comment that this was too much to be spending for health care. But how is the appropriate percentage to be determined?

On a somewhat more limited scale, if a community has to decide whether to expand a community hospital or clinic, it must also decide what variety of services to provide. Should every hospital in a city have the latest diagnostic equipment, or should hospitals share this expensive equipment? If the latter, we must recognize that morbidity and mortality will be

ing patients from one hospital to another.

There is not even social agreement about the appropriate mechanism to bring into play to determine these choices. Are health services best left to the influences of market forces, or are they "too important" to be subjected to these vagaries, as some argue? Should these decisions be made bureaucratically or by means of some form of direct citizen input or by the employers and third-party payers who finance most people's health care? Or should decisions be made through some combination of choices? The danger is that we often conceal these choices – even from ourselves – because we cannot bear to face the reality that any attempt to contain costs is virtually certain to have the effect of increasing morbidity and mortality.[2] The only honest approach is to face these consequences openly in a general public discussion of the trade-offs we want to make.

Since the problem of scarce or inadequate resources will remain constant, mechanisms must be developed to determine how resources should be allocated. One of the most ineluctable dilemmas of this sort is the supply of organs for transplantation. With the development of anti-rejection drugs and the refinement of surgical and post-surgical care procedures, transplantation is now a promising option for extension of quality of life in many cases. However, there is a natural limitation to the number of cadaver organs that will become available for transplant. The only way to increase this number would be to increase the death rate through head trauma – which is hardly a morally acceptable approach. However, this natural limitation is exacerbated by the fact that many of the cadaver organs which would be technically suitable for transplantation are not made available because permission to use them is not obtained. The opportunity to indicate the wish to donate organs on one's driver's license has not been widely exercised. In this country, statutes have recently been enacted requiring that the family of every potential donor be approached and asked to consider donation of the relative's organs. Some European countries have gone one step further and enacted provisions that would authorize harvesting organs for donation *unless* the patient or family took the initiative to register explicit objections. However, this approach transgresses the right to self-determination of patient and family in ways many find objectionable.

Restraints

Even when a medical resource is readily available, there can be an ethical question as to whether it should be put to use in a specific case. To take an extreme example, if a patient is near death from cancer and asking to die, it would be cruel and inhumane to subject him to an organ transplant, even if this might extend his life for a few weeks or months.

The determination of death itself is in significant measure an ethical issue. If we decide to declare a person dead when there is conclusive evidence that the brain has ceased irreversibly to function (even though heart and lungs can be kept functioning with the use of a respirator), we are deciding (1) that the traits essential to *human* life are gone forever, and therefore (2) that it is morally appropriate to forego continuation of these bodily systems.

This is an issue which has recently been addressed by statutory definitions of death adopted in most states. However, some difficult questions are left unsettled by these statutes. They define death in terms of irreversible cessation of "all functions of the entire brain, including the brain stem." But anencephalic infants may have an intact brain stem, yet lack the parts of the brain which give rise to consciousness and voluntary functions. Under present law, therefore, they cannot be declared dead in order to harvest organs for transplantation. Yet they have no prospect for any kind of life we would call meaningful or of quality; and parents of these infants sometimes feel strongly that the best way to find meaning in their birth is to provide an opportunity for some other child to live through organ transplantation. If we are to make these organs available for transplantation, either the definition of death must be altered in these cases, or the policy must be revised that dictates waiting until death is declared in order to remove organs.

Even more controversial is the question of the use of fetal tissues for transplantation. These are especially suitable for donation, both because the fetus has not yet developed elements of an immune system that lead the tissues to trigger rejection in the host and also because they are unusually fast-growing. Initial research in the use of these tissues shows promise as a means of treatment of such tragic diseases as Parkinson's, Alzheimer's, and diabetes. But we are far from reaching a consensus as a society on the issue of the moral status of the fetus and the acceptability of abortion, so there will undoubtedly be intense debate on the use of the "product" of abortion in these ways.

Many states have enacted legislation to give legal backing to the "Living Will" or other advance directives in which the patient expresses his wishes about limits to treatment in terminal illness. Through the related instrument of a Durable Power of Attorney for Medical Decisions, the patient can designate one or more specific persons to make decisions about limiting treatment on their behalf. Patients' preferences in these matters carry considerable moral weight even when there is no explicit legal backing for them, and many courts and medical ethics policy panels have agreed.

These mechanisms apply to the patient who, for one reason or another, is incapacitated from taking an active part in decisions. For the competent, adult patient, the right to refuse treatment is firmly established in the law (largely due to a series of court cases involving Jehovah's Witnesses, who will not accept blood transfusions for religious reasons), although many health professionals face a dilemma of conscience in standing by and watching a patient suffer or die when remedies are available. The values in conflict here are, on the one side, life and health, and on the other side, self-determination or autonomy and religious or personal values.

For each of us there will still come "a time to die." The difficulty lies in discerning just when that appropriate time has arrived and submitting to it gracefully. The chief values to be sought in this situation are comfort and death with dignity, and decisions about limits to treatment should be guided by these values.

Difficult questions arise with regard to minors – and especially newborns – in this area. Courts have generally held that parents may not refuse essential treatment for a minor child on religious grounds. "Parents have the right to make martyrs of themselves for their religious beliefs, but they do not have the same right to make martyrs of their children," says a key court opinion in this area. But are we to say the same about decisions to limit treatment based on judgments about the quality of life in prospect for the child? Are parents entitled to make the judgment that life is not worth living for an infant born with serious anomalies? What about decisions based on judgments about the burden on the family of caring for the child? Are these ever appropriate? We have been engaged in a social debate on this topic for the past several years. The Reagan Administration issued regulations (which came to be called "Baby Doe Rules") that would take these decisions out of the hands of parents and physicians and subject them to social oversight. Several versions of these regulations were struck down by federal courts, largely on technical legal grounds, until finally new federal legislation was passed which defines a category of "medical child abuse," which applies when life-or-death treatment is foregone. The various states are still working out the mechanisms to implement these guidelines, and physicians must take these legal dimensions into account as well as their own professional and personal moral thinking.

Most Living Will documents specify that it is "heroic," "extraordinary," or "artificial" measures that may be foregone. But it is far from clear what is to be classified under these labels. Is organ transplantation always an extraordinary measure because it is risky? Is use of a rare drug inherently heroic because it is expensive? On the other hand, is the use of a cheap and effective drug like penicillin always to be classified as "ordinary treatment" - even in the case of a patient near death from other causes for whom death from pneumonia would be merciful? Classifying a treatment as morally optional is relative to the specifics of the situation, and these may be quite complex.[3]

We must recognize that although medical science can effect dramatic cures and palliative measures in many cases, it cannot bestow immortality. For each of us there will still come "a time to die." The difficulty lies in discerning just when that appropriate time has arrived and submitting to it gracefully. The chief values to be sought in this situation are comfort and death with dignity, and decisions about limits to treatment should be guided by these values. Debate will continue in this area--for example, concerning whether there is a moral difference between withholding a life-support measure such as a respirator and withdrawing the measure once it has been initiated. Most court rulings and medical ethics panels have found no moral difference between these, but health professionals "in the trenches" report that they find it much more difficult to turn off a respirator and allow breathing to stop than to stand by and not initiate resuscitation measures, or to not put the patient on the respirator when they know it would be inhumane and futile to do these things.

Another area of debate is the acceptability of withholding nutrition and hydration from terminal patients. There is medical evidence that death from starvation or dehydration is not especially painful, and thus this may be the most humane approach in some cases; but many feel that food and water are basics that cannot be withheld from patients under any circumstances. This procedure is harder to maintain in cases in which the only effective way of delivering nutrition and hydration involves technologically sophisticated and highly invasive techniques such as hyperalimentation.

Most controversial in this area is the question of whether it is ever appropriate to employ active measures to kill the patient in order to end his suffering. The Netherlands has recently enacted legislation that would allow active euthanasia under certain carefully limited circumstances, but it remains firmly illegal in this country. And most health professionals would agree that it is incompatible with their professional roles to cause death actively. Indeed, the American Medical Association has ruled that physicians ought not be involved in capital punishment by means of lethal injection for this reason.

With regard to all these issues, the role of medical ethics is not to dictate the answers but rather to facilitate discussion among all the parties involved in hopes of bringing them (and ultimately the larger society) to a moral consensus on these difficult questions. Many hospitals have now given a formal role to medical ethics, often in connection with the creation of bodies that have come to be called "Hospital Ethics Committees." The structure and functioning of these bodies vary widely in different institutions, but their characteristic role is to guide decision-makers in a discussion of the many dimensions relevant to the choice in a particular context and to assist in analyzing the ethical and value issues at stake.

FOOTNOTES

1. See Glenn C. Graber, Ph.D.; Alfred D. Beasley, M.D.; and John A. Eaddy, M.D., *Ethical Analysis of Clinical Medicine* (Baltimore and Munich: Urban and Schwarzenber, 1985), pp. 40-53.
2. For a powerful argument to this effect, see Guido Calabresi and Philip Bobbit, *Tragic Choices* (New York: W. W. Norton, 1978).
3. For a listing of 50 considerations that play a role in decisions about limiting treatment, see Graber, Beasley, Eaddy, *Ethical Analysis of Clinical Medicine*, pp. 184-185. □

PENNZOIL V. TEXACO: THE ETHICS OF A CAMPAIGN CONTRIBUTION*

by Bruce D. Fisher

The Texaco/Pennzoil case has raised a significant ethical issue because of a lawyer's campaign contribution to a Texas state court trial judge. Should unethical behavior be condoned under the guise of positive law?

Everything about the Texaco/Pennzoil litigation over the Getty stock is written in hyperbole: it was the largest civil jury verdict and judgment in legal history, the largest bankruptcy filing in history, and it precipitated a proliferation of lawsuits in both state and federal courts. Perhaps it comes as no surprise that a significant portion of this case occurred in Texas.

The fascinating series of lawsuits which have come to be known as the Texaco/Pennzoil "case" also raised a much discussed ethical aspect of the litigation--the propriety of a $10,000 campaign contribution from Pennzoil's lead attorney to the election campaign fund of the Texas state court trial judge made *after* the case was assigned to the particular judge. The further fact that the contribution has now been upheld by the Texas Supreme Court has caused further doubts about the ability of the Texas court system to correct what some perceive to be gross errors in the administration of justice in one of our largest states. The business community, and indeed, the community at large, has a continuing interest in state legal systems which not only *are* fair, but which are *perceived* as fair.

An Overview of Some Schools of Jurisprudence

When speaking about legal ethics, one is dealing with what is known as "jurisprudence," which Blackstone once defined as the principal and "most (sic) perfect" branch of ethics.

**Space limitations have necessitated omitting detailed analysis of certain decisions here. Those desiring more explication can write directly to the editor.*

Jurisprudence examines theories of law, and in so doing, attempts to define law and discuss its objectives. What are the objectives of law? These are the sorts of questions that the jurisprudent asks and attempts to answer.[1] Yet, answers in this area often yield indeterminate results, since identifying and raising consciousness about the issues is perhaps the most important aspect of ethics. Arriving at the single answer to an ethical question is a chimera: there is merely an answer from among an *array* of possible choices, each of which emphasizes different values. But each serves an important function, including the identification of what would otherwise be unrecognized or implicit tradeoffs. When one makes tradeoffs explicit, there is the opportunity for clearer analysis, for more considered, and, often, better decisions. This is not to say that schools of jurisprudence are necessarily in conflict with one another or always yield indeterminate results. The various ethical schools *can* and often *do* reach common results.

The different values in legal ethics are represented by what are called "schools of legal thought" or "schools of jurisprudence."[2] There are a number of different schools of jurisprudence, including positive law, natural law, historic jurisprudence, sociological jurisprudence, utilitarian jurisprudence, realistic jurisprudence, policy-sciences/evaluative jurisprudence, and variations of these schools.[3] Two schools of jurisprudence will be used to evaluate the Texaco/Pennzoil litigation:positive law and natural law. A branch of positive law called analytical positivism refers to rules made by a political superior to political inferiors with sanctions imposed if the rules are broken.[4] Classic examples of positive law include statutes passed by legislatures, rules made by judges when deciding cases (common law), and regulations made by administrative agencies. In other words, law "on the books" made by governmental bodies is positive law.

Natural Law

Natural "law" is not law at all in the positivistic sense, since it is not legislated or mandated by a court or other body charged with making rules. Rather, natural law refers to a person's sense of what is right, just, or fair.[5] Thus each person's own rational sense or perception of "god-given" order is what is meant by natural law. Given its possible sources (each person's own perceptions of right, or alternatively, "god"), there is considerable room for variation on what natural law would require of us in a given situation.

The value of legal ethics other than positive law stems from their introducing analytical factors into legal analysis other than the purely mechanical matters associated with enactment and enforcement of positive law. Thus one could ask, "Isn't following the statutes, case law, and regulations--positive law--enough?" The answer has to be "No," because the positive law is constantly being applied to novel situations unforeseen by the people when they created the federal or state constitutions, or by the legislature when it wrote the stature, or by the judge when he or she issued the decree. It is in these novel cases that schools of jurisprudence other than positive law provide guidance on the proper direction for positive law. In other words, natural law, and the various other schools of jurisprudence, provide a construct to judge the validity of the positive law.[6]

A Brief History of the Texaco/Pennzoil Litigation[7]

In late 1983 Pennzoil had been following the highly publicized dispute between Gordon Getty, a director of Getty Oil Company and trustee of 40.2 percent of the outstanding shares of Getty Oil, and the board of directors of Getty Oil Company. Pennzoil announced an unsolicited, public tender offer for 16 million shares of Getty Oil at $100 and shortly thereafter contacted both Gordon Getty and the Getty Museum (the latter held about 11.8 percent of Getty Oil's shares) to explore the purchase of their Getty shares. On January 1 and 2 of 1984, a "Memorandum of Agreement" was drawn up that reflected terms reached by Pennzoil, Gordon Getty (as trustee), and the Getty Museum.

According to this agreement, Penn-zoil and the Trust (with Gordon Getty

On December 10, 1985, the Texas state court entered judgment in Pennzoil's favor for $11.12 billion (to include punitive damages, prejudgment interest, and costs). In effect, the jury had found that Pennzoil and Getty entities had an enforceable contract with which Texaco had knowingly and intentionally interfered.

as trustee) were to become partners on a 3/7 to 4/7 basis, respectively, in owning and operating Getty Oil. Gordon Getty was to be chairman of the Getty board, and Hugh Liedtke (Pennzoil's chief executive officer) was to become chief executive officer of the new company. The Memorandum of Agreement provided that it was subject to the approval of the board of Getty Oil Company and that the agreement was to expire if not approved at the board meeting scheduled to begin on January 2, 1984. Pennzoil's Liedtke and Gordon Getty (acting as trustee) both signed the Memorandum of Agreement before Getty's January 2 board meeting, and Harold Williams (the museum's representative) signed the memorandum shortly after the board meeting began. The board voted to reject the Memorandum of Agreement because they thought its offering price of $100 per share was too low. The Getty board then made a counteroffer to Pennzoil of $110 per share plus a $5 "stub" to be paid after the sale of ERC (a Getty subsidiary) from excess proceeds over $1 billion. There was evidence that during a later recess in the board meeting, the counteroffer of $110 plus a $5 stub was presented to and accepted by Pennzoil.

Pennzoil's oral acceptance was conveyed to the Getty board, which then adjourned on January 3, 1984 (the Getty board meeting having extended from January 2 to January 3). On January 4, 1984, Getty Oil and the Museum issued a joint press release announcing an agreement in principle (that differed from the terms of the original Memorandum of Agreement signed by Liedtke, Gordon Getty, and Williams) but which reflected the $110 price per share plus the $5 stub contained in the oral agreement. Later on January 4, 1984, Pennzoil issued an identical press release. However, also on that date, Boisi, a representative of the Getty board, continued to "shop around" for a better price for the Getty shares, and in the process contacted Texaco.

On January 4, 1984, Texaco management hired First Boston, an investment banker, to represent it in possible acquisition of Getty Oil. Texaco financial planners held meetings that day to determine the value of the Getty shares. On January 4, Pennzoil's lawyers worked on a written version of the Getty/Pennzoil "transaction agreement" that described the agreement in greater detail than the press releases. On January 5, Pennzoil's board met to ratify its officers' actions in negotiating the agreement, and the Pennzoil attorneys continued to work on the written agreement. On the same day, Texaco's board authorized its officers to offer to buy 100 percent of Getty's stock and to take the necessary action to effect this result. Texaco met with the museum's representatives, who agreed to sell to Texaco on January 5, the same day that Texaco met with Gordon Getty, who agreed to sell the trust's shares to Texaco for $125 per share. On January 6, Getty held a telephone board meeting at which it voted to withdraw its counteroffer to Pennzoil and to accept Texaco's offer. Texaco then issued a press release announcing that Getty and Texaco would merge and on January 6, 1984, Texaco and Getty signed a merger agreement. Pennzoil soon thereafter telexed Getty that Pennzoil would honor its agreement with Getty and expected Getty to do likewise. Subsequently, Getty Oil filed suit in a Delaware court seeking a declaratory judgment that it was not bound by any agreement with Pennzoil.

The Jury's Verdict

Pennzoil then sued Texaco in a Texas state court in Houston, Texas, for the intentional tort of interference with contractual relations. Since both Texaco and Pennzoil are Delaware corporations, Texaco could not remove the case to federal court because there was no diversity of citizenship or federal question jurisdiction. On November 19, 1985, a jury returned a verdict in favor of Pennzoil for $7.53 billion dollars in compensatory damages, plus an additional $3 billion in punitive damages. On December 10, 1985, the Texas state court entered judgment in Pennzoil's favor for $11.12 billion (to include punitive damages, prejudgment interest, and costs). In effect, the jury had found that Pennzoil and Getty entities had an enforceable contract with which Texaco had knowingly and intentionally interfered.

Texaco petitioned the federal district court in New York to issue a temporary restraining order to stop Pennzoil from executing on the judgment, and the New York federal district court issued such an order on December 17, 1985. On January 10, 1985, the federal district court sitting in New York held that Texaco was entitled to a preliminary injunction prohibiting enforcement of the Texas state court's judgment,[8] reasoning that there would be irreparable harm to the public and to Texas if the Texas judgment were enforced in any way and to any extent before reaching appellate finality. Further, the federal court reasoned that Texaco was likely to succeed on the merits of its claims that damages should be reduced, and that Texaco was entitled to appeal the Texas state court verdict without having to file a supersedeas bond of over $11 billion, as Texas law required, as a condition to appeal a Texas state court judgment. Pennzoil appealed this collateral attack to the U.S. Second Circuit Court of Appeals in New York, which affirmed the district court's decision to enjoin the Texas state courts from enforcing its execution laws and appeal bond requirement.[9] However, the Second Circuit held that the federal district court could not review Texaco's claims already asserted unsuccessfully in the Texas state court. Nonetheless, the Second Circuit held that the district court had jurisdic-

Constitutions in democracies derive their legitimacy from the "consent of the governed." Hence the "people" are the ultimate sovereign in a democracy, even though they do not occupy the position of day-to-day sovereign. Also, people are the governed. This circularity of authority is in the very nature of constitutional democracy and seems not to corrupt or offend positive law's superior/inferior requirement inordinately.

tion over claims alleging that Texas' automatic and mandatory lien and supersedeas bond provisions violated the due process and equal protection provisions of the U.S. Constitution as applied.[10] The Second Circuit also noted that Texaco showed irreparable harm and sufficiently serious questions going to the merits to make them a fair ground for litigation and that the balance of hardships tipped decidedly in Texaco's favor, entitling Texaco to preliminary injunctive relief.

Pennzoil's Appeal

Pennzoil appealed this result to the U.S. Supreme Court, which reversed the Second Circuit on April 6, 1987.[11] Speaking through Justice Lewis Powell, the Supreme Court held that the federal courts should have abstained from interfering with the state court proceeding under the federalism principles enunciated in *Younger v. Harris*.[12] The Supreme Court was unmoved by Texaco's argument that Texas procedures afforded Texas no practical means of appealing the judgment against it. After all, reasoned the Supreme Court, Texaco never raised its federal constitutional claims in the Texas court system, and the Texas constitution contains an "open courts" provision guaranteeing litigants that Texas' courts will be open to them. Such a provision might afford a basis for the Texas appellate courts to relieve Texaco from the huge appellate bond requirement.

While Texaco's collateral attack on the Texas trial court's judgment was going on in New York, Texaco had appealed the Texas trial court's judgment to the Texas court of appeals. This could be done without Texaco's having to post the debilitating $11 billion bond, because the federal district court and court of appeals had issued an injunction against Texas' enforcement of the bond requirement. However, once the United States Supreme Court reversed the district court's injunction order, Texas could once again impose its bonding requirements, something which apparently, Pennzoil was all too willing to have done. Thus Texaco filed for Chapter 11 bankruptcy on April 12, 1987, one day before the scheduled hearing in the Texas courts on whether Texaco would have to post the full $11 billion appellate bond.[13]

The Securities and Exchange Commission (SEC) filed an amicus brief with the Texas Supreme Court asserting that Pennzoil's tender offer to some of Getty's shareholders for more than was offered to other Getty shareholders violated federal securities laws.[14] Further, the SEC asserted that no exemption was available for Pennzoil in this matter. If the Texas Supreme Court had adopted the SEC position, this would have meant that the Pennzoil/Getty contract for the sale of the shares was illegal and void. In such a case there would have been no contract for Texaco to interfere with. Texaco would owe Pennzoil nothing. All of these events have been mooted by the recent $3 billion settlement between Texaco and Pennzoil, helped along by a large Texaco stockholder, Carl Icahn.[15] Meanwhile, Texaco has emerged from bankruptcy proceedings after having shed approximately $5 billion dollars in assets to pay certain creditor claims, the largest being Pennzoil's.

Jurisprudential Aspects

Although there were over 100 allegations of reversible error by Texaco in *Texaco v. Pennzoil*, one of the most notorious was the alleged impropriety of a $10,000 campaign contribution to trial judge Farris by Pennzoil's lead attorney, Joseph Jamail. This contribution occurred after Jamail had filed Pennzoil's case against Texaco.[16] Additionally, Mr. Jamail served on Judge Farris' re-election steering committee

during this same period.[17] Texaco moved to recuse or disquality Judge Farris on grounds that by his remaining as the presiding judge in such circumstances, he created an "appearance of impropriety."

Under Texas law, Texaco's motion was assigned to another judge (Judge E. E. Jordan) to decide whether Judge Farris should continue to preside in the case. After the hearing on the matter, Judge Jordan refused to recuse or disqualify Judge Farris. Texaco unsuccessfully challenged this ruling under both federal and state law.

Positive Law

Positive law is a theory of law developed by persons such as Auguste Comte, John Austin, and Hans Kelsen. One variant, analytical positivism, developed by the Englishman John Austin, focuses on three factors: (1) a command; (2) from the sovereign to its subjects; (3) with sanctions available if the command is not observed.

Positive laws competing for application in the Texaco case on the campaign contribution issue were article V, section 11, of the Texas constitution Canon 3C of the Code of Judicial Conduct. Although constitutions readily appear to fulfill the "rule" requirement of positive law, they present a challenge when interpretated as being positive law. While sanctions are not often expressly included in constitutions, implicit remedies such as injunctions and even damages are available for violations of constitutions.

A conceptual hurdle in treating the Texas (or any) constitution as positive law lies in satisfying the political superior/political inferior requisite. Specifically, constitutions in democracies derive their legitimacy from the "consent of the governed." Hence the "people" are the ultimate sovereign in a democracy, even though they do not occupy the position of day-to-day sovereign. Also, people are the governed. This circularity of authority is in the very nature of constitutional democracy and seems not to corrupt or offend positive law's superior/inferior requirement inordinately, although admittedly it is circular in nature.

Whether Canon 3C is positive law is indeterminate. The Texas Supreme Court, a political superior, adopted Canon 3C along with the other canons in 1974. Texaco's attempt to disqualify or obtain recusal of Judge Farris is predicated on Canon 3C's being positive law.

During the trial phase of Pennzoil's wrongful interference case against Texaco, there were two trial judges. Judge Farris began the trial on July 9, 1985, but after it had progressed three months (to October 22, 1985), he became ill and was replaced by a former Texas district judge, Solomon Casseb, Jr. Judge Casseb had previously served for eight years as a district judge. It was Casseb who served the last three weeks of the trial and ruled on Texaco's motion for a new trial.

On March 7, 1984, after Pennzoil had filed suit against Texaco in Judge Farris' court, Mr. Jamail had contributed $10,000 to Judge Farris' election campaign fund. On or about October 1, 1984, Texas filed a motion for recusal or disqualification of Judge Farris, arguing that Jamail's campaign contribution created an appearance of impropriety. Judge Farris refused to disquality or recuse himself. Pursuant to Texas law, which provides for the appointment of another judge to decide such motions, a hearing was held, resulting in Judge Jordan's refusing to recuse or disquality Farris. Texaco appealed this result as one of many alleged errors to the Texas Court of Appeals. Texaco based its appeal of the lower court's refusal to disquality Judge Farris on Canon 3C of the Texas Code of Judicial Conduct, which took effect several years before this case arose and still remains in effect. This Canon states, "A judge should disqualify himself in a proceeding in which his impartiality might reasonably be questioned, including but not limited to instances where . . . he had a personal bias or prejudice concerning a party . . . ."[18] Thus Texaco argued that a $10,000 campaign contribution by an opposing litigant's attorney to a sitting judge's reelection campaign fund made in the circumstances of this case is a basis for a judge's disqualifying or recusing himself.

Texaco relied on three cases in support of its position. The principal case was *McLeod v. Harris*,[19] which concerned a man involved in a divorce case who moved that the trial judge recuse himself because the judge and his wife were personal friends of the movant's wife and there were political differences between the movant and the judge. The motion was rejected at the trial level. The matter was appealed to the Texas Supreme Court, which held that McLeod's hearing request on a motion to recuse must be granted, even though the grounds for such a request were other than those found in the Texas constitution article V, section 11. In a footnote to that case, the Texas Supreme Court said that a Texas statute and Judicial Canon 3C elaborated on the grounds for judicial recusal. This Texas Supreme Court decision clearly supports Texaco's argument that Canon 3C provides a basis for judicial recusal. Hans Kelsen's positive law approach, which emphasizes that discernment of positive law depends on the particular law in question's conforming to the "grand norm" and intermediate norms above it in a hierarchy of norms, assists in determining whether Canon 3C is positive law. Kelsen would argue that as long as the language of Canon 3C is within the purview of article V, section 11, Canon 3C is in fact positive law. This is essentially what the McLeod case held.

Two subsequent Texas appellate court decisions have interpreted *McLeod v. Harris*. The first, *Robb v. Robb*,[20] involved a divorce. There a recusal motion was factually based on the trial judge's having received political contributions from one party's attorney, while the opposing counsel had run against the judge in the same election. Texaco also cited *Manges v. Garcia*[21] in support of its position that recusal grounds exist that are implicit but within the ambit of article V, section 11 of the Texas constitution. There a litigant sought a mandamus order requiring a judge to hear a case after the judge on his own motion had recused himself on grounds other than those expressly found in article V, section 11.

Since the American Bar Association is not a sovereign in the state of Texas, the part of Canon 7 permitting attorneys to contribute to judicial campaigns is not positive law in Texas. By raising the Canon 3C "bias" argument, Texaco was treading a fine and possibly contradictory positive law rationale: that Canon 3C is within the purview of the article V, section 11 "interest" and yet is beyond the traditional interpretation that the Texas Supreme Court has given to that word, which renders that interpretation vulnerable to the charge that it is beyond the purview of "interest" and hence unconstitutional.

Given Texaco's recitation of Texas positive law authority arguably condemning Pennzoil's attorney's campaign contribution to the trial judge, the court of appeals in Houston rejected the conclusion that the questioned contribution resulted in denying Texaco a fair trial. In so doing, the court of appeals acknowledged Texaco's statement of the facts. The Houston court of appeals also recognized the existence of Texaco's cited cases but noted three other more recent statements of contrary positive law found in Texas cases, allegedly supporting an attorney's campaign contribution on the trial judge. The first, *River Road Neighborhood Association v. South Texas Sports, Inc.*[22] involved campaign contributions by an attorney to two justices on the Texas court of appeals in San Antonio. The attorney owned an interest in a corporate litigant in the case. The contributions constituted 21.7 percent of Justice Esquivel's and 17.1 percent of Justice Tigerina's total reported campaign contributions. The City of San Antonio filed a motion to recuse or disqualify the two justices on grounds that the contribution violated Canon 3C of the Texas Code of Judicial Ethics (sic). The city advanced an argument based on Kelsen's positivism when it asserted that *McLeod v. Harris* had upheld the constitutionality of Canon 3C by noting that this canon implements article V, section 11 of the Texas Constitution (which articulates grounds for judicial disqualification).

The court in the *River Road Neighborhood* case brushed aside the *McLeod* decision as precedent on Canon 3C, saying, "We need not concern ourselves with the question concerning the precedential weight which should be given a footnote to an opinion." The *River Road* court concluded that the only grounds for judicial disqualification were found in article V, section 11 of the state constitution and in the Texas Revised Civil Statutes Annotated, article 15, and not in a footnote in *McLeod*. In so doing the *River Road* court rejected the *McLeod* basis for disqualification and returned to the pre-*McLeod* line of cases holding that article V, section 11, was inclusive and exclusive on judicial disqualification issue. The *River Road* court was advancing a Kelsonian positive law argument in effect by holding that Canon 3C as a subsidiary norm was outside the grand norm (here article V, section 11, of the Texas constitution) and as such was invalid. A more conventional way of stating the same conclusion would be to say that Canon 3C was unconstitutional.

The bases for judicial disqualification contained in the Texas constitution are limited ("interest; consanguinity or affinity; the judge has been counsel in the case"). "Interest" as construed by the Texas courts appears more limited than "bias"--the Canon 3C ground for judicial disqualification. Arguably the word "interest" is broad enough to encompass "bias", though. "Interest" has been construed by the Texas courts to cover something of a precuniary nature at the time of suit, no matter how small. The *River Road* court turned to the Texas constitution's express language in article V, section 11, as the sole basis for determining if there was to be a judicial disqualification. Not surprisingly, the court found no consanguinity or affinity or that either justice had been counsel in the case. As for "interest," the court noted that while pecuniary interest was required, however small, none existed here because it "was not contended that either of the challenged justices may gain or lose anything of a pecuniary or personal nature because of any judgment which might be rendered in this case."

The appellate court in the *Texaco* case also cited *Rocha v. Ahmad*[23] to reject Texaco's motion for disqualification or recusal of Judge Farris. In *Rocha* in an *en banc* opinion by the San Antonio court of appears, the court held that Justices Esquival and Tigerina were not disqualified from sitting on the case tried by a lawyer who had contributed to their campaigns. The *Rocha* court made several observations: first, it noted that this was not a case where contributions of many thousands of dollars had been made by a *party* to the litigation. Rather, a party's lawyer or law office had made the contribution. Secondly, Texas judges are elected. Such candidates must run campaigns and seek contributions to defray expenses. The court then made an observation quoted with approval in the Texas court of appeals *Texaco* opinion:

> *It is not surprising that attorneys are the principal source of contributions in a judicial election. We judicially know that voter apathy is a continuing problem, especially in judicial races and particularly in contests for a seat on an appellate bench. A candidate for the bench who relies solely on contributions from non-lawyers must reconcile himself to staging a campaign on something less than a shoestring. If a judge cannot sit on a case in which a contributing lawyer is involved as counsel, judges who have been elected would have to recuse themselves in perhaps a majority of the cases filed in their courts. Perhaps the next step would be to require a judge to recuse himself in any case in which one of the lawyers had*

refused to contribute or, worse still, had contributed to that judge's opponent.[24]

The *Rocha* court overruled the motion to disqualify both Justices Esquivel and Tijerina.

In addition to both the *Rocha* and *River Road* cases, the court of appeals in Texaco relied on *Manges v. Guerra*[25] to reject Texaco's Canon 3C argument. There a party to a lawsuit had filed motions to recuse three Texas Supreme Court justices.

The Texas court of appeals in *Texaco* appears to have returned to the pre-*McLeod* holdings that article V, section 11 of the state constitution is the only basis for disqualifying a judge. In so doing the court of appeals has not addressed the issue Texaco raised of whether campaign contributions to judges by lawyers with pending cases in their courts violates Canon 3C. Rather, the holding is that Canon 3C is unavailable to challenge campaign contributions to judges. This is the positive law on campaign contributions by attorneys to judges in one appellate district in Texas. The Texas Supreme Court upheld the appellate court in a two-sentence decision on November 2, 1987. The Texas Supreme court adopted the appellate court's reasoning without further comment.

The American Bar Association's Model Code of Judicial Conduct contains Canon 7,[26] which specifically addresses political activity by the judiciary. This canon says that candidates for judgeships, including incumbent judges, should not themselves solicit or accept campaign funds or solicit publicly stated support. However, judges and judicial candidates may establish committees of responsible persons to secure and manage the expenditure of funds for their campaigns and to obtain public statements of support for their candidacies. Such committees are not prohibited from campaign contributions and public support from lawyers. The time during which such solicitation may be made is not sooner than 90 days prior to a primary election and no later than 90 days after the last election in which he/she participates during the election year. The campaign funds may not be used for private benefit of the judicial candidate or the candidate's family.

Had this part of Canon 7 been adopted by the Texas Supreme Court and placed into effect when it adopted the balance of the Canons of Judicial Conduct on July 25, 1974, this would appear to have allowed Mr. Jamail's campaign contribution to Judge Farris if the situation had met Canon 7's time constraints (the *Texaco* decision does not indicate the time of the judicial election in relation to the contribution), but the Texas Supreme Court has not adopted this part of Canon 7. Since the American Bar Association is not a sovereign in the state of Texas, the part of Canon 7 permitting attorneys to contribute to judicial campaigns is not positive law in Texas. By raising the Canon 3C "bias" argument, Texaco was treading a fine and possibly contradictory positive law rationale: that Canon 3C is within the purview of the article V, section 11 "interest" and yet is beyond the traditional interpretation that the Texas Supreme Court has given to that word, which renders that interpretation vulnerable to the charge that it is beyond the purview of "interest" and hence unconstitutional.

Texaco could blunt this argument by asserting that the life of the common law has been dynamic. It is recognized by courts in Anglo-American jurisprudence that particular words can take on new meanings as time progresses, meanings often broader than originally conceived or anticipated by the writers of particular words in constitutions, and yet within the general spirit of the word used in the constitution and the document generally. Given the unsettled nature of the Texas Supreme Court's own view of article V, section 11's purview, coupled with the strong negative perception unlimited judicial campaign contributions pose to the independence of the judiciary, it is within the common law tradition that the Texas Supreme Court make common law in this area by saying that there is a limit on the percentage that a lawyer or a particular law firm can contribute to a judge's reelection campaign. This solution would satisfy the public's and business's natural law sense in a way that would provide the judiciary with some way to finance reelection campaigns without inpugning the independence of the judiciary. The Texas Supreme Court has the power to make positive law that addresses the problem of excessive and arguably improper judicial campaign contributions. This is but one reason to hope that the Texaco/Pennzoil litigation reaches a judicial resolution in the Texas Supreme Court.

Indications

The *Texaco* case indicates several facets of the positive law. First, positive law is often indeterminate, as the conflicting opinions concerning Canon 3C's relationship to the Texas constitution indicates. Further, even if Canon 3C were determined to be the positive law applicable here, it is uncertain if the courts in Texas would hold that it prohibits the campaign contribution in question. Second, Hans Kelsen's hierarchy of norms which stresses the non-normative aspect of law (what "is" as opposed to what "ought" to be the law) is much in evidence. The Texas courts seem to be more concerned with whether Canon 3C, the inferior norm here, technically comes within the language of article V, section 11 of the Texas constitution, the higher norm, rather than whether such contributions "ought" to be allowed.

Natural Law

As noted above, natural law refers to whether a decision is fair, right, and just in the eyes of each individual. The $10,000 campaign contribution and other campaign support to Judge Farris after the *Texaco* case was assigned to him presents a problem of perceptions for the judicial system. The campaign contribution was open, of public record, and apparently conformed to the mechanics prescribed by the American Bar Association's Code of Judicial Conduct. As such, the contribution could be said to reflect natural law. Four questions, however, should be answered before determining whether Mr. Jamail's campaign contribution meets natural law tests. First, what had been the pattern of past election con-

tributions and amounts by Mr. Jamail to Judge Farris? Had he given contributions of $10,000 or similar amounts *every* election year for an extended period of time or was this a one-time donation? Second, what had been the timing of Mr. Jamail's contributions to Judge Farris' election campaign? Third, what had been the level of Mr. Jamail's campaign contributions to other members of the Texas judiciary? Fourth, in what courts did Mr. Jamail do most of his practicing? If the answers to these questions disclose no anomalies, then natural law would appear to be satisfied and the campaign contribution would be legitimate, despite the initial appearance of impropriety. If, on the other hand, the contribution were the first Mr. Jamail had ever made to Judge Farris except for nominal past contributions, the contribution here was many months from a distant election, and Mr. Jamail seldom practices before Judge Farris and makes no campaign contributions of any significant amounts to judicial candidates, the contribution would appear to fail to satisfy the ethic of natural law and should be condemned.

Conclusion

The Texas court system in the Texaco/Pennzoil matter was a disappointment to most natural law advocates. While there are many legal issues in this long, complex case, the campaign contribution is one which even the average citizen can understand. It is unfortunate but understandable that Texaco was unwilling to "roll the dice" and ask the U.S. Supreme Court--the ultimate positive law *court* (although not the ultimate positive law *authority* in a democratic government with three branches)--to rule on the legality of Texas' law allowing attorney contributions to judges. Although positive law might justify campaign contributions to the judiciary, there should be time, pattern, amount, and disclosure limits placed on such contributions to maintain public confidence in judicial objectivity and the sense that natural law principles underlie positive law.

Given the mutability of natural law, it is, of course, possible to use it to *support* payments to judges, ostensibly for campaign purposes. However the raw, callous insensitivity of the payment here leaves the unmistakable impression to many that justice is "for sale" in one of our most important industrial states. Thus the natural law ethic brings into question a practice of attorneys making unregulated judicial campaign contributions arguably tolerated by the ethic of positive law.

One might well examine the Texaco result holding the campaign contribution legal--according to a legal positivist approach--and simply conclude that professional ethics are purely and simply a matter of what legislatures and courts say professional ethics should be. Such an approach has the potential advantages of knowability and stability, coupled with the authoritativeness of positive law.

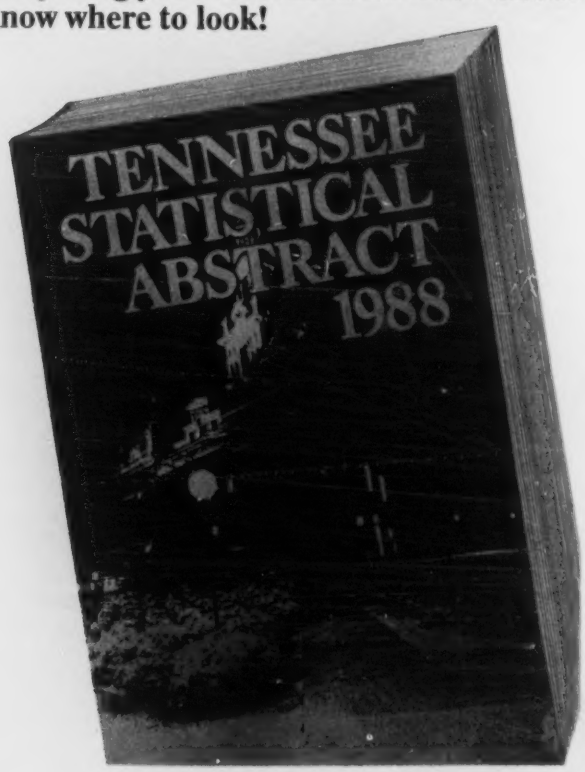
A moment's reflection shows the intellectual and moral poverty in allowing positive law to be the sole basis of professional ethics. Positive law that fails to satisfy the felt needs of "higher law"--natural law--is destined for a short life and possibly universal condemnation. Recall that positive law was the philosophical and legal defense that the Nazi defendants invoked at the Nuremburg "war trials" following World War II. Since most scholars have said that there was no positive law against genocide then in force that could be applicable to Germany, while the legal system of the Third Reich mandated and tolerated the abuses of Jews and others, much, if not all, of what Hitler did was in fact "legal" in the positivistic sense. It was, in fact, the Allies' repugnance to such outrageous positive laws that led to the conclusion that a sovereign's positive laws that do not satisfy natural law are invalid. Should not the same criticism be leveled against professional ethics which would allow the judicial campaign contribution in the *Texaco* case, even though positive law justifies the abominable professional ethics exhibited there? Should the same type of legal positivists who tolerated the Third Reich now be allowed to foist upon society professional ethics that again subject the legal system to ridicule, contempt, and scorn?

FOOTNOTES

1. See B. *Fisher, Introduction To The Legal System* 1-25 (2d ed. 1977).
2. Id.
3. Id.
4. Id.
5. Id.
6. Id.
7. The facts for this discussion are taken from *Texaco v. Pennzoil*, 729 S.W.2d 768 (Tex. Civ. App.--Houston 1987).
8. *Texaco v. Pennzoil*, 626 F. Supp. 250 (S.D. N.Y. 1986).
9. *Texaco v. Pennzoil*, 784 F.2d 1133 (2nd Cir. 1986).
10. *Pennzoil v. Texaco*, No. 851798 (U.S. S.Ct., Apr. 6, 1987)(WESTLAW, SCT).
11. 401 U.S. 37 (1971).
12. N.Y. Times, April 13, 1987, at 1, col. 6.
13. N.Y. Times, July 25, 1987, at 21, col. 5.
14. Id.
15. N.Y. Times, December 19, 1987, at 1, col. 6.
16. Id.
17. Id.
18. *Texas Supreme Court, Code Of Judicial Conduct,* Cannon 3C, part (C),reprinted at TEX. REV. CIV. STAT. ANN. art. 320a, tit. 14, app. B (Vernon 1986).
19. *McLeod v. Harris*, 582 S.W.2d 772 (Tex. 1979).
20. *Robb v. Robb*, 605 S.W.2d 390 (Tex. Civ. App.--El Paso 1980).
21. *Manges v. Garcia*, 616 S.W.2d 380 (Tex. Civ. App.--San Antonio 1981).
22. *River Road Neighborhood Association v. South Texas Sports, Inc.*, 673 S.W.2d 952 (Tex. App.--San Antonio 1984).
23. *Rocha v. Ahmad*, 662 S.W.2d 77 (Tex. App.--San Antonio 1983).
24. Id.
25. Manges v. Guerra, 673 S.W.2d 180 (Tex. 1984).
26. ABA Code Of Judicial Conduct, Canon 7 (1972). □

THE 1988 TENNESSEE STATISTICAL ABSTRACT IS YOUR SOURCE FOR INFORMATION

about everything you ever wanted to know about Tennessee and didn't know where to look!



More than 700 pages of economic and social data about Tennessee--including the most current historical information available for the state, MSAs, counties, cities, and towns.

Of special interest to planners and decisionmakers, the Tennessee Rankings section provides a means to compare Tennessee with other southeastern states and the nation in areas such as per capita income, population estimates, real estate and finances.

NOW AVAILABLE

"If we were judging a contest for the best state Statistical Abstract, our vote would go to yours." Glenn W. King, Chief, Statistical Compendia Staff, Bureau of the Census, Nov. 1985

Please send me _____ copy(ies) of the **1988 TENNESSEE STATISTICAL ABSTRACT** at the price of $27.95, plus $2.05 postage and handling per copy.

Please reserve a STANDING ORDER for ___ copy(ies). I understand that I will receive all future editions of the **TENNESSEE STATISTICAL ABSTRACT** until I elect to cancel my subscription.

Make checks payable to The University of Tennessee, and mail to Center for Business and Economic Research, 1000 Volunteer Blvd., Suite 100, Knoxville, TN 37996-4170. ☐ Bill Me. ☐ Payment Enclosed.

SEND TO:

NAME

ADDRESS

CITY STATE ZIP

SIGNATURE OF AUTHORIZED PURCHASER

N 434 0: 440
CONGRESSIONAL INFORMATION SERVICE
ATTN: SRI
4520 EAST-WEST HIGHWAY
BETHESDA MD 20814

Survey

The University of Tennessee
Summer 1988
Volume 24 Number 1